Mind the Gender Gap – Implicit bias in STEM education

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Abstract: Gender inequality in the academic context is influenced by implicit bias – namely the process of automatic associations. Implicit gender biases might influence teaching, assessment, review, and recruitment processes and hence equality within higher education. Data on the extent to which implicit gender bias in relation to career choices is present in the general population has been collected during many years in the web-based Project Implicit but has not, to the best of our knowledge, yet been investigated among teaching staff in a STEM-focused faculty at a Swedish university. In this study, we measured the implicit gender bias of 51 participants with teaching experience, ranging from doctoral students to professors at the Faculty of Engineering at Lund University (LTH). Our results show that implicit gender bias – where men are more closely associated with STEM subjects and women with liberal arts subjects – is present, even though the majority did not indicate beforehand that they explicitly associate either men or women with STEM. We further show that our results compare well to those of Project Implicit. The main takeaways from this paper are: there is a widespread issue of implicit gender bias among teaching staff at LTH and the population at large; and there is a dire need for increased awareness of such mechanisms to approach the goal of a gender-equal academic environment.

Keywords: Subtle bias, subconscious bias, equality, stereotypes, implicit attitudes, diversity, higher education, teaching, IAT

1 Introduction

Gender inequality is a widespread problem, causing much harm on individual and societal levels, and the academic world is not exempt. In particular, STEM subjects (science, technology, engineering, and mathematics) suffer from a large gender gap due to many different factors. Women's scientific work is systematically undervalued (Fan et al., 2019; Keng, 2020) and women are given less favourable opportunities (Gvozdanović & Maes, 2018). However, there are no scientific explanations or empirical grounds for this (Kersey et al., 2019; Llorens et al., 2021; Shapiro & Williams, 2012) – if anything, women on average perform slightly better in higher education than men (Balart & Oosterveen, 2019). This treatment harms women's careers, work-life balance, and mental health, among other aspects (Llorens et al., 2021). By extension, this also means that the university as such, and the society as a whole, will fail in the effort to produce the most competent engineers and researchers when many of the best candidates fall away from academia.

One major source of gender inequality, explicit sexism aside, is cognitive gender bias. Cognitive biases refer to systematic errors in cognitive processes that disproportionally favour or disfavour something in relation to something else. Common examples of cognitive biases are availability bias, anchoring bias, confirmation bias, and the halo effect (see e.g., Gvozdanović & Maes, 2018). Such biases, and their associated heuristics, are not limited to gender equality issues but are part of our everyday lives, impacting our decision-making and behaviour and associations. The use of simplifications and our accumulated experiences help us to sort and interpret information quickly and to make decisions under uncertainty or based on scarce information (Kahneman, 2013). Further, we are prone to using heuristics or shortcuts in our thinking processes in lieu of activating the more energy-consuming mental processes (Kahneman, 2013). *Implicit bias* is when humans are not neutral in their judgments but have preferences towards or aversions against something or someone without being aware of them (Gvozdanović & Maes, 2018). This means that attributing certain traits or qualities to a person happens before reflecting logically or acting intentionally. In academia, implicit biases to the effect that women are less suited for male-dominated or male-associated fields might contribute to the systematic mis-favouring of women to pursue a career in STEM subjects. At the same time, individuals might be unaware of their automatic preferences, and hence they may not take sufficient action to overrule them, leading to sub-optimal conclusions of e.g. whom to hire or whose work to publish. The extent to which scholars, and particularly teaching staff, are biased is therefore important to investigate.

Implicit gender biases have been measured for a long time in the web-based Project Implicit (Charlesworth et al., 2022). Their Implicit Association Test (IAT) for Gender-Science associations (Poppenhaeger, 2019) has generated data from 628,295 people, between January 2003 and December 2015. This data shows clear associations between male-coded words and STEM subjects while female-coded words are associated with liberal arts subjects. Some local initiatives on this have been made previously in Europe to study this phenomenon (Poppenhaeger, 2019), however, to our knowledge, no similar study has been carried out in a Swedish setting. Sweden is considered a quite progressive country in many respects, ranking the 5th most gender-equal country in the world in 2024 by the World Economic Forum (World Economic Forum, 2024) and receiving 1st place in the Gender Equality Index 2023 among the EU countries (EIGE European Institute for Gender Equality, 2024).

The following research questions have guided this study:
1. Can implicit gender biases be found among teaching staff at the faculty of engineering at Lund University (LTH) in Sweden?
2. How do implicit gender biases at LTH differ from the population at large?

2 The Gender Gap in the Academic Context

Gender inequality within the STEM subjects in academia has for a long time been an issue for policymakers and legislators. Some progress has been made to narrow the gap between men and women in some subjects. For example, in the biological sciences nearly 60 percent of the degrees were awarded to female students in North America in 2014 and in the physical sciences, that number was 41 percent. However, in other subjects such as computer science and engineering, the levels are 18 and 19 percent respectively (Ganley et al., 2018). A similar situation is reported in Europe by the European Research Council, ERC, noting a gender disparity within academia as a whole, where Llorens et al (Llorens et al., 2021) state gender bias as one reason.

In a study of the determinants for the uneven gender balance in academia, Ganley et al. (2018) conclude that the subjects that are perceived to have the greatest potential for future income are the ones that are highly linked to mathematics, i.e., engineering and computer science. These subjects have the highest degree of gender bias, perhaps reflecting an old stereotype that men are better at mathematics. No biological reasons have been found to assume such a difference (Kersey et al., 2019; Llorens et al., 2021; Shapiro & Williams, 2012). The gender bias in academia in mathematics is also visible in student feedback and evaluation of courses, whereby female teachers, particularly junior staff, score 37 percent lower than male staff (Fan et al., 2019), indicating that students themselves have a negative bias towards female staff. Additionally, Grunspan et al. (2016) conclude that male students tend to overestimate other male students' performance in class, with a 0.57-point overestimation on a 4-point scale, indicating a strong male bias in the study. As such, there is a gendered bias related to mathematics, which could be a reason for the gendered imbalance within the STEM fields.

Not only do women experience grading bias as students, but they also are less likely to be awarded grants (Ancis & Phillips, 1996; Bianco et al., 2011; Schuster et al., 2021). Further, as teachers, women are perceived as less knowledgeable, resulting in biased student evaluations of their teaching (Keng, 2020; MacNell et al., 2015). The literature also states that female students and researchers are less likely to receive funding to go abroad, or to be promoted in academia (Bornmann et al., 2007; Wijnen et al., 2021). Women that do choose to enter the STEM fields, as a student or as staff, are likely to face more obstacles than their male counterparts, both in terms of gender discrimination in academia, but also from external factors (Kapareliotis & Miliopoulou, 2019). A Swedish national study on gender equality in academia found that there is a critical point in women's academic careers, between undergraduate studies and doctoral studies, concluding that success at an undergraduate level does not automatically mean success/continuation on a doctoral level (Dahlerup, 2010). Additionally, a study on the transition between undergraduate and graduate studies by Åsberg et al. (1999) concluded that in general there was uncertainty among women about what the transition to doctoral studies meant. Additionally, the study concluded that male students felt encouraged to pursue doctoral studies to a greater extent than female students; and that male students that did not apply for doctoral studies gave *impersonal* reasons for not applying. On the contrary, female students gave to a greater extent *personal* reasons for not applying to doctoral studies. The report concludes that masculinity is the norm within academia, a norm that is perceived as unproblematic by male students, whereas in women this norm may create a feeling of not belonging in academia regardless of the academic field.

After overcoming the hurdle of applying for doctoral studies, gender inequality persists. A study from Örebro University in Sweden found that female doctoral students experienced lower support for their research, and several female doctoral students felt mistreated for personal reasons (Dahlerup, 2010). Additionally, a study from the Royal Institute of Technology (KTH) in Sweden found that 45 percent of the doctoral students had thought of abandoning their studies and that twice the amount of female versus male doctoral students reported administrative duties (Hanström, 2000). The same study found that 30 percent of the women with a doctoral degree reported that they had felt discriminated against, whereas no male with a doctoral degree in the study had felt discriminated against.

The systematic devaluing of women's scientific work has been well documented. As early as 1870, Matilda Joslyn Gage described this phenomenon, later named “the Matilda effect” by Rossiter in 1993 (Rossiter, 1993). The systematic discrimination of women in academia was observed and reported in 1997 when Wennerås and Wold published their much-appraised study on nepotism and sexism in peer-review in Nature (Wennerås & Wold, 1997). In their examination of the peer-review process at the Swedish Medical Research Council for postdoctoral fellowship applications, they found that merits were evaluated differently, whether they were associated with a female or male researcher. The numbers are clear: a woman must publish more than twice as many articles of equivalent quality to be considered equally competent to a man (Wennerås & Wold, 2000), undermining the meritocratic principle (Gvozdanović & Maes, 2018). Another example is the John or Jennifer study from Yale University (Moss-Racusin et al., 2012), in which around 100 people were asked to review fictive but identical résumés, and where the ones signed “Jennifer” were consequently rated less competent, less hireable, and as having a lower mentoring potential. In addition, the Jennifers were hypothetically offered lower salaries than the Johns (Moss-Racusin et al., 2012).

As a result of the systematic devaluing of women in academia, there is an asymmetry in male and female academic career paths, referred to as the ‘vanish box’ or ‘the leaky pipeline’ (Gvozdanović & Maes, 2018). Despite more women graduating from undergraduate programs, they are later heavily underrepresented in more senior academic positions, particularly professorships. In STEM subjects, women are underrepresented in all stages of their careers, however the pipe is leaking more in more senior positions, making women heavily underrepresented and men correspondingly overrepresented in the highest academic positions. To illustrate this, we plotted the gender distribution at LTH in 2019 for different academic career stages in Figure 1 below, but this leaky pipeline pattern is recurring at many other universities. For examples of how this is expressed in different countries and institutions, please refer to the She Figures report (European Commission, 2021).

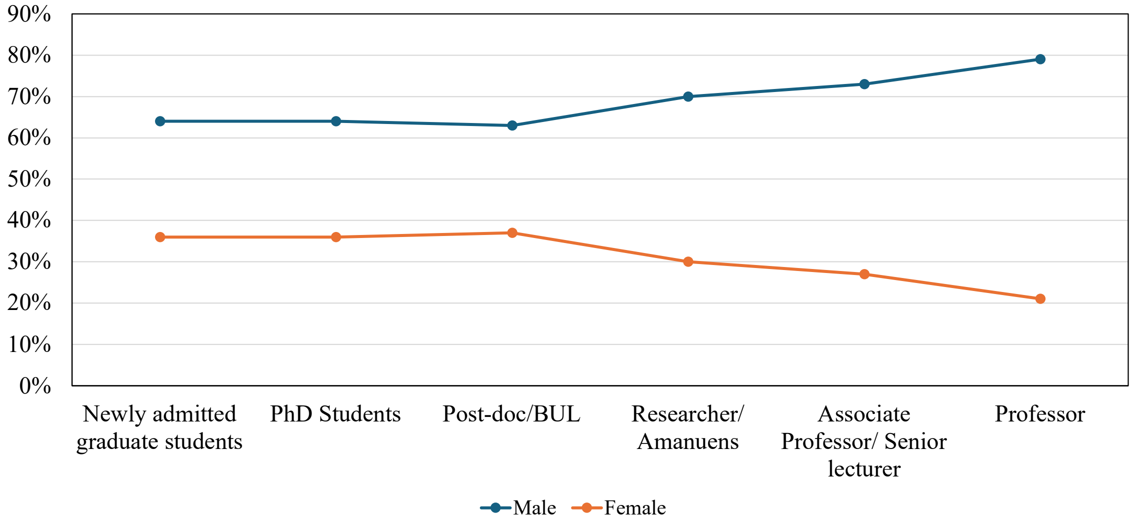

Figure 1. *A leaky pipeline effect is visible at LTH, where women are underrepresented and men overrepresented in all positions, but more pronounced in the more senior positions.*

In sum, the STEM field suffers from a huge gender gap. This gender gap manifests itself as a promotion gap (Bornmann et al., 2007; Wijnen et al., 2021), pay gap (Ganley et al., 2018; Moss-Racusin et al., 2012), internalisation gap (Åsberg et al., 1999), administration gap (Hanström, 2000), career gap (European Commission, 2021), merit gap (Wennerås & Wold, 2000), and exhaustion gap (Jonge, 2001), amongst others. However, there are ways to counteract the effects of the gender gap in the academic context. Suggestions include an increased awareness of and commitment to overcoming personal gender biases (Devine et al., 2017), female role model availability both in person (Gladstone & Cimpian, 2021) and represented in textbooks (Bax, 2021), anonymized application processes (Johnson & Kirk, 2020), double-blind peer-review processes (Kern-Goldberger et al., 2022), increased diversity and diversity training (Kamerlin, 2020) and implicit bias awareness (Jackson et al., 2014).

A conclusion of the above is that there is a need for understanding and dealing with these issues at STEM faculties. In the coming sections, we will focus on LTH – the Faculty of Engineering at Lund University, Sweden - as it is a faculty specialized in STEM subjects' education and research – and investigate the current state of implicit gender bias in teaching staff.

3 Method

The empirical data were collected through the Implicit Association Test (IAT) on Gender-Science relations (*Take a Test*, n.d.) that was sent out to potential participants and accompanied by a short survey. This IAT measures the implicit association between female-coded words (such as Aunt, Grandmother, Girl, Daughter) or male-coded words (such as Man, Father, Husband, Male) and words belonging to two different branches of academia: natural science (such as Geology, Biology, Astronomy, Math) and liberal arts (such as English, History, Humanities, Literature). This is done by measuring the participants' reaction time when choosing a word to associate with the word shown on the screen (*Take a Test*, n.d.). The task is to make a choice as fast as possible, hence the test captures the participants' first association before the person has a chance to overrule their automatic choice. The process is repeated and randomized to avoid learning patterns. Project Implicit is a self-enrolment long-term web-based study that has been collecting responses for many years. A total of 628,295 entries were collected for the Gender-Science IAT between January 2003 and December 2015.

The study was conducted in December 2021. The target group was teaching staff (from doctoral students to professors) at several departments at the Faculty of Engineering (LTH) at Lund University. The eligibility criteria to participate in the study was teaching experience, without further specification. The survey was accompanied by a brief oral introduction or an e-mail introducing the project and the task. In total, 56 people responded to the survey. Approximately 160 people were reached by the survey via e-mail or in person, implying a response rate of around 35%.

The survey was divided into two parts; part one was filled in before, and part two after the IAT test was performed. Part one included questions on personal information (respondent gender, position at the university) together with a question on the respondents' explicit association of gender and science ("Which group do you link closest to STEM subjects – men, women or neither?"). After this, the link to the test was provided along with instructions on how to perform the test. Then, the participants were directed to part two of the survey. In part two, the result from the IAT was to be self-reported. In addition, participants were asked whether they had had female role models within STEM subjects during their upbringing. Finally, there were a few free-text questions where we asked the participants to reflect upon their results and comment on their ideas and experiences regarding the role of implicit bias in academia. The questions were formulated as follows "Did your result surprise you? Why/why not?", "Do you have any comments/ideas/reflections on the test and its implication in teaching and learning in higher education?", and "Do you have any ideas on how to reduce implicit bias or the effects from implicit bias at the university?".

The test results from the IAT scores are presented on a scale of 7 steps, where a strong automatic association between *male with science and female with liberal arts* was attributed with the highest number (7) and a strong association between *female with science and male with liberal arts* was attributed with the lowest number (1).

4 Results

4.1 Participant information

The 56 respondents were divided into two main groups, namely the PhD students, which normally have spent <5 years in a position involving teaching at the university, and more senior staff (from post-docs to professors) that have spent >5 years in the academic environment (hereafter denoted "Others"). Out of these 56 respondents, 5 were disqualified from the dataset (3 male "others" and 2 female PhD students) due to either taking the wrong test (n=4) or not putting the correct type of answer from the test score into the answer field (n=1). In Table 1 below, descriptive statistics of the 51 participants are presented. The average IAT score is presented for each group.

Table 1. *Participant information.*

Class	**Category**	**N**	**%**	**Average IAT score**
Gender identity	Man	30	59%	5.20
	Woman	21	41%	5.10
	Other/prefer not to say	0	0%	-
Position	PhD Students	29	57%	5.17
	Others (e.g., Professor, Associate professor, Senior lecturer, Post-Doc)	22	43%	5.14

4.2 Implicit Association Test Scores

In Figure 2 a comparison of the IAT score distributions for the two cohorts—Project Implicit and teachers at LTH—is presented. Each of the seven pairs of staples depicts the percentage from each group that got each score during the test. A score from 1 to 7 can be obtained, see explanatory text in Figure 2 for what each score means. A score of 4 indicates a neutral (unbiased) result, and all scores exceeding 4 indicate a bias toward associating men with STEM subjects and women with liberal arts.The average value for Project Implicit at large was 5.28, while the average value for our participants from LTH was slightly lower, 5.16. It is clear from Figure 2 that the averages exceed the neutral value of 4, and that both groups have a bias towards men and STEM subjects. A one-sided t-test shows that the average values do not differ significantly from each other (p = 0.55).

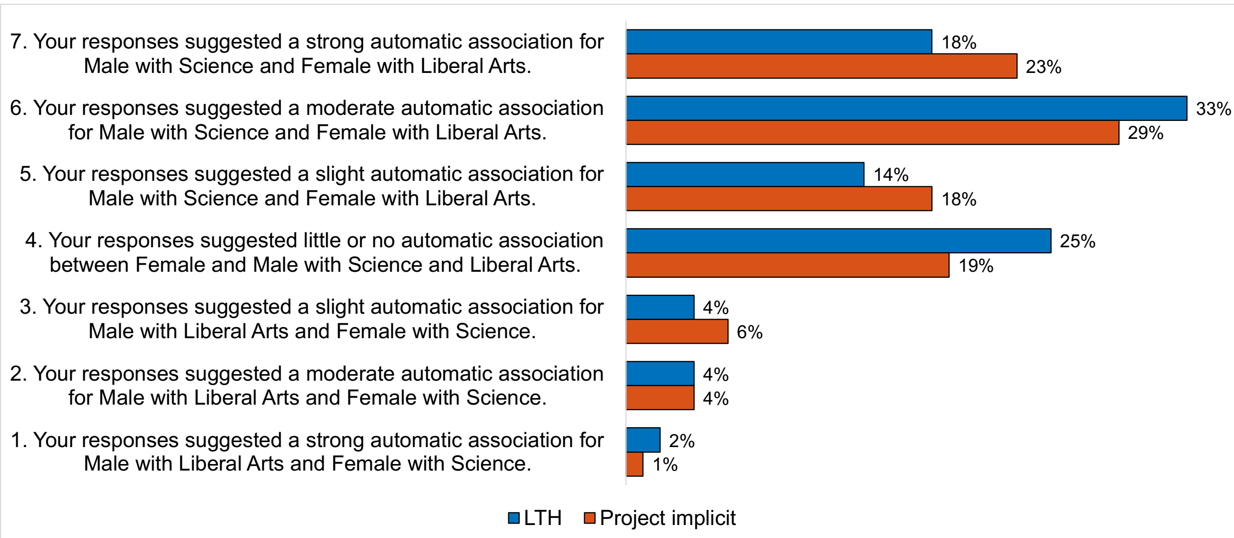

Figure 2. *IAT score for participants at LTH and Project Implicit, measured in percentages. The mean value for LTH is 5.16 and the mean value for Project Implicit is 5.28.*

To investigate if gender affiliation and position within academia had an impact on the IAT scores, we compared the scores between these groups with each other (Figure 3). The highest average score was associated with male PhD students (5.26). The IAT score distributions differ among the groups. Among male participants, the score is lower among more senior staff. Among the female participants, the lowest average score is from the PhD students (5.0), and unlike the male participants, the score increases with seniority.

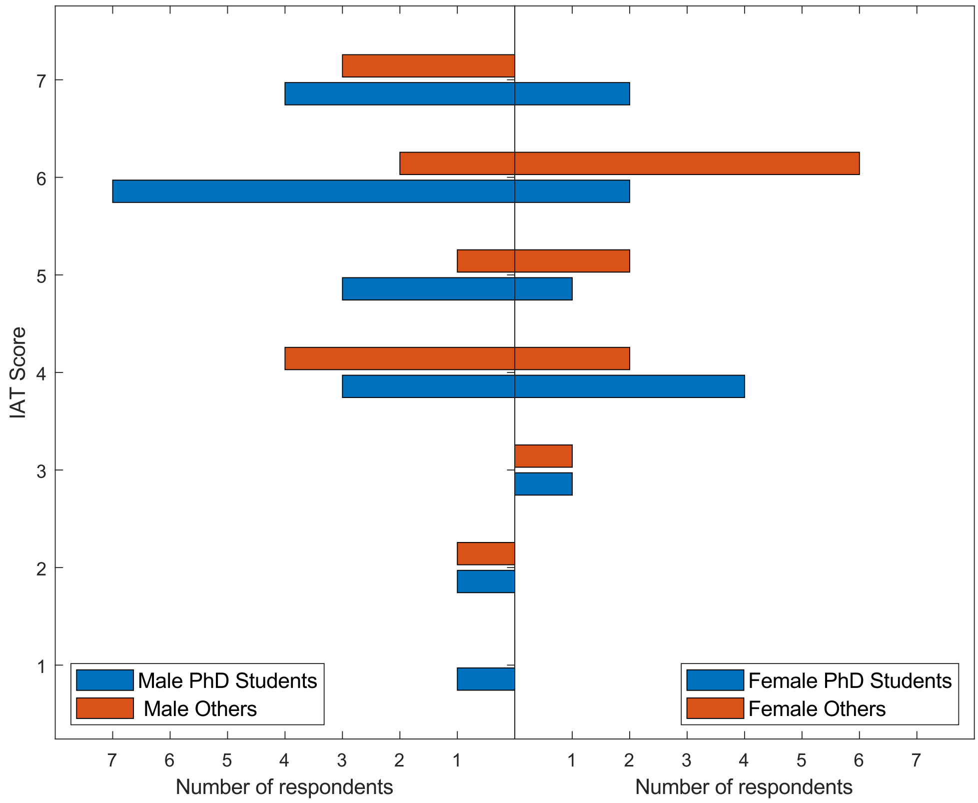

Figure 3. *Distribution of scores for the Gender-Science IAT for our participants at LTH. The data is divided into female and male PhD-students and the more senior employees, here denoted "Others". The mean values are Male PhD students (n = 19): 5.26; Male others (n = 11): 5.09; Female PhD students (n = 10): 5.0; Female others (n = 11): 5.18.*

On the question regarding the participants' explicit association before taking the test ("Which group do you link closest to STEM subjects – men, women or neither"), 39% (20 participants) responded "Male" while only 4% (2 participants) responded "Female". A majority of 57% considered themselves linking neither of the genders closer to STEM subjects before performing the test. That is, they claim to have no explicit association between gender and study subjects and considered themselves to be unbiased regarding gender and science. Linking the explicit association (known bias) with the average IAT it is noted that the group answering neither had the highest average score. Further, the group answering women had the lowest score (Figure 4).

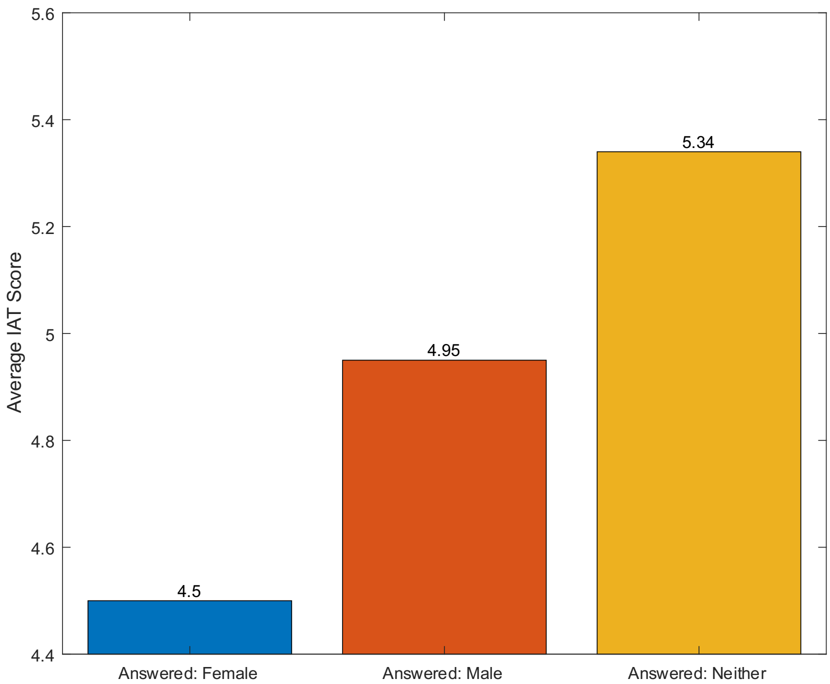

Figure 4. *Average IAT scores divided on stated explicit biases, where 57% of the participants stated that they linked "neither" (n=29) of the genders closer to STEM subjects, 4% (n=2) linking women more closely and 39% (n=20) links men more closely to STEM subjects before taking the IAT test.*

Previous research suggests that the presence of role models has a substantial impact on the careers of women in academia. To investigate if this holds true for our participants, they were asked to indicate if they had had a female role model within STEM during their upbringing. The results (seen in Figure 5) show little variation for the population at large when reviewing the scores based on this factor alone. However, looking at different groups within the population there are some differences. Male participants with female role models scores higher than male participants without a female role model, and female participants with female role models have significantly lower implicit bias results compared to female participants without female role models.

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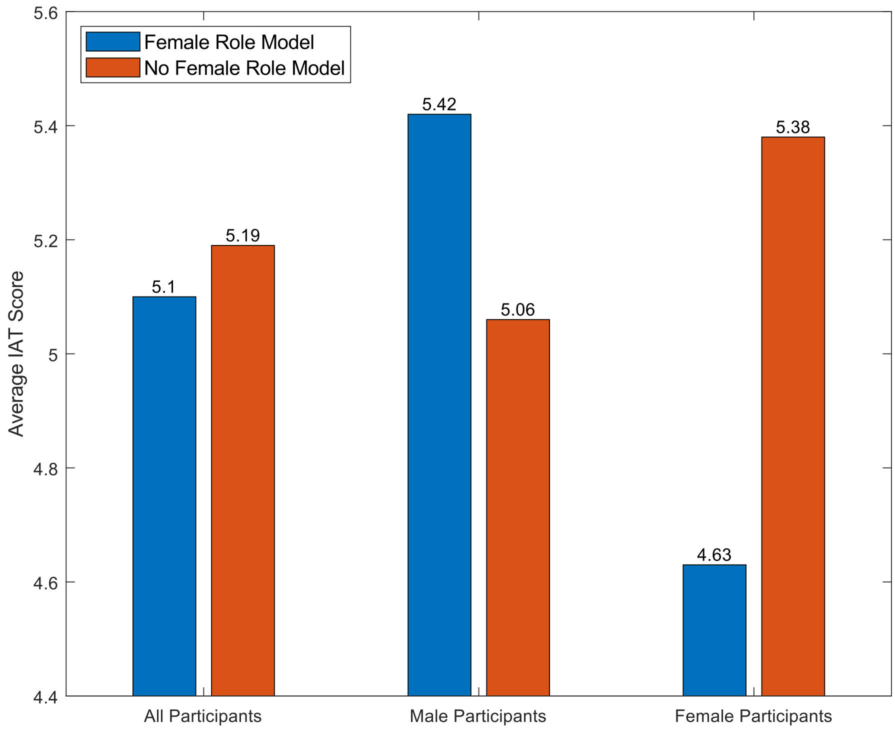

Figure 5. *Average IAT scores based on the presence of female role models within STEM subjects in the respondents' lives.*

After taking part in the IAT test, our participants had the option to answer a few free-text questions. One thing notable from the answers was that many were surprised by their results as they do not see themselves as having conscious biases on this matter. One participant (scoring 7 at the test) provided this answer "Not really, I expected this. I read a lot of science history and unfortunately it is more books about men in science". Another notable thing was that many of the participants provided ideas on how to reduce bias, such as using anonymous exams and applications, early education on gender issues in school, making role models of the "counter-stereotypical gender" more visible and facilitating more discussions on this issue among university teachers. Some also mention that a good first step is to simply be aware of one's own implicit biases.

5 Discussion

5.1 Gender bias in STEM education

Gender, being an "identity contingency," as coined by Claude M. Steele in his book *Whistling Vivaldi* (2011)is not self-chosen and virtually impossible to escape. It comes with a long row of expectations, prejudice, and – most importantly – uneven preconditions for our choices in life and careers. It is no longer a question if (implicit) gender biases exist in academia, several studies, as previously presented, have pointed to this fact (see: Kersey et al., 2019; Llorens et al., 2021; Shapiro & Williams, 2012). This situation has various implications, most notably that female students and staff within STEM are likely to be evaluated more strictly in relation to their male counterparts (Ancis & Phillips, 1996; Grunspan et al., 2016; Schuster et al., 2021). Some suggest that STEM courses show gendered differences in performance, finding that female students face higher levels of grade penalties at tests while lab courses within the same subject show little gendered difference (Koester et al., 2016). Others identify a similar phenomenon, where depending on class size, assessment type and classical lecture-based pedagogical methods were associated with lower grades for female students (Odom et al., 2021). Despite studies showing that male students score better at tests, some studies show a more sustained learning outcomes for female students (Balart & Oosterveen, 2019). Additionally, women subjected to gender bias are not only unequally treated, but they also do not treat *themselves* as equal to their male peers and undervalue their own academic ability (Ancis & Phillips, 1996). This leads to less career-promoting behaviour and less of a supportive environment, which results in slower career development in academia in general (Ancis & Phillips, 1996).

5.2 Implicit Gender bias at a Swedish STEM faculty

Swedish society and academia have high gender-equality ambitions. The facts and trends are well-established: surely scholars in Sweden (the country that scored the highest in ''Gender Equality Index'' in 2021 (European Institute for Gender Equality., 2021)) should reflect this situation? The results found in this study are telling a different story. Our investigation shows that teaching staff at a Swedish engineering faculty suffer from a notable gender bias. In addition, their scores are distributed remarkably like the entire population of those taking the IAT test (see Figure 2). This trend holds true for all stages of the academic career – from doctoral students to professors. Thus, although women in Swedish STEM higher education may perform in general better than their male counterparts, they still face bias (SOU, 2011:1) . Because of this, there is a risk that female students and staff can experience injustice and inequality at LTH, like that found in previous studies (see: (Ancis & Phillips, 1996; Grunspan et al., 2016)). This injustice will likely take the form of devaluing female performance, both by students and teaching staff. This further affects the number of female applicants to junior academic positions and can also affect possible academic collaborations and applications for future projects, as presented by Bornmann et al. (2007) and Wijnen et al. (2021).

While our results show a slight difference in the average bias score between female and male teachers, this difference is small (see Figure 3). Interesting to note is that female doctoral students have a lower bias than women that have been working within academia for a longer time, whereas the opposite pattern can be found among men. However, the average score points toward a moderate-to-strong implicit gender bias for all groups.

When asked about what gender the participants explicitly associated with STEM subjects before taking the IAT test, a majority answered "neither". However, the results show that those reporting this had the highest IAT score, showing the strongest bias towards men and STEM subjects and women and liberal arts subjects (Figure 4). This outcome was surprising for the participants; many of them wrote in the free-text boxes that they were stunned by their own scores in relation to their self-perception of not being biased. This finding highlights the importance of identifying and acknowledging that we sometimes are unaware of our own biases. These biases will continue to have power over our choices and values which in turn contribute to systemic unfairness. As suggested by, e.g., Devine et al. (2017), the increased awareness of one's own biases and the personal commitment to reducing them is one of the ways forward for reducing gender bias in academia. Therefore, we believe an increased understanding of the impact of implicit bias on scholars and teachers is important for the continuous work toward an equal academic environment.

5.3 The importance of role models and awareness

Llorens et al. (2021) and Ganley et al. (2018) highlight the importance of representation and female role models within STEM to increase the sense of belonging and create a supportive environment and decrease gender bias. Similarly, our results show that female PhD students with a female role model within STEM have the lowest average IAT gender-STEM score and that there is a considerable difference between them and the female participants without a role model (Figure 5). From this, we conclude that female role models within STEM are mostly important for female PhD students and, in turn, female students. Female representation within the STEM field should be considered an important aspect to address this bias, although not the only one.

Cognitive biases in general and implicit biases specifically are deeply rooted and nothing we will get rid of easily. Our automatic associations are subjected to our current and past contexts, our present or non-present role models, and the prevailing societal climate and its associated norms. Biases have a larger impact on our behaviour than we are aware of. It is important to note that there is a difference between the potential consequences of minor logical slips made by an individual, and systematic prejudice and conclusions about certain groups of people and their associated abilities. Implicit gender bias is an outcome of subconsciously acting upon previously experienced associations and preferences, and it is difficult to change the current state. Implicit bias is, however, different from overt sexism. As opposed to being deliberate, implicit biases are subconscious as a part of skewed interpretations of information. While sexism still might be part of explaining gender differences in academia, the concept of implicit bias suggests that this is not likely to be the only explanation for injustices.

In this paper, we argue that awareness of the prevalence of this phenomenon is an important first step in reducing the consequences of implicit gender bias in academia. One way to increase awareness is to arrange seminars in which employees perform the IAT test, followed by time to reflect in groups ways of addressing biases in teaching and research, rather than a focus on individual test scores.

Failure to address these phenomena has clear and negative implications. The negligence found in dealing with the current effects and future state of this phenomenon is clear. However, increased awareness (Devine et al., 2017), available role models (Bax, 2021), anonymized applications, tests, and review processes (Johnson & Kirk, 2020), and increased diversity (Kamerlin, 2020) are all examples of tools used to curb biases. If this problem is not properly addressed, we will continue to have a situation where women – half of the population – are at risk of being stigmatized, discriminated against, and unjustly treated. Consequently, their opportunities for pursuing a future career within their subject of choice will be severely diminished in comparison to that of their male peers.

5.4 Limitations to this study

Although our sample is rather small, our results align with Project Implicit's huge data collection and show some interesting trends. Our respondents were recruited via e-mail, but not everyone volunteered to complete the task. Chances are that those who chose to respond are those more interested in the subject. Therefore, further studies need to use a larger sample size to get a significant result and confirm and elaborate on our findings. An extended study could also try to find additional factors that could further explain the tendencies partially discerned in this paper. As for now, it is hard to explain why there are differences without conducting a new study with an experimental design, and we can only note that they exist.

6 Conclusion

This paper set out to investigate gender bias in academia and more specifically implicit gender bias among teaching staff at LTH, an engineering faculty at a Swedish university. We show that implicit gender bias is present and that it differs from the participants' self-perception. The literature on gender bias within academia is vast and covers many different areas and perspectives on the subject. Most notably, female students within the STEM field face more challenges than their male counterparts, their study performance is examined harder, they value their own performance lower than male students, and female teaching staff are considered less knowledgeable--this despite female students, in general, getting slightly better grades than male students as shown previously for a Swedish context. This highlights a strong gender bias within the STEM field at LTH and in academia in general.

The university's primary purpose is to educate people to become qualified professionals, whether in the industry, public service sector, or elsewhere. If men and women do not get the same possibilities to successfully educate themselves, societal injustice will follow. The presence of gender bias among teaching staff thus risks excluding, discriminating, or preventing women from pursuing studies or a career within STEM, something that has been found in various studies, (e.g., Dahlerup, 2010; Ganley et al., 2018; Llorens et al., 2021).

Despite Sweden being considered a progressive country regarding gender equality, our results do not indicate any major differences between our population, teaching staff at LTH, and the larger population that has taken the IAT gender bias test. The average score is slightly lower in our population; however, this difference was not statistically significant. Male participants have a higher average score than females, but with little difference. There are also slight differences in scores regarding seniority at the university and in the presence of female STEM role models. All these groups fall, on average, within category 5 "Slight automatic association for Male with Science and Female with Liberal Arts". The results indicate that there is a need to continue addressing the issue of gender bias within Swedish STEM higher education to avoid discriminating against female students and staff.

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