Professionals Australia
Gender and Diversity

UNCONSCIOUS GENDER BIAS IN THE STEM PROFESSIONS

About Professionals Australia

Professionals Australia (formerly the Association of Professional Engineers, Scientists and Managers, Australia) represents over 23,000 professional engineers, scientists, managers, veterinarians, surveyors, architects, pharmacists, information technology professionals, interpreters and translators and transport professionals throughout Australia.

Professionals Australia members are employed across all sectors of the Australian economy. This includes all tiers of government and in a diverse range of industries throughout the private sector including Roads, Rail, Water, Electricity, Information Technology, Telecommunications, Consulting Services, Laboratories, Research, Surveying, Architecture, Retail Pharmacy, Mining, Oil, Collieries, and Manufacturing.

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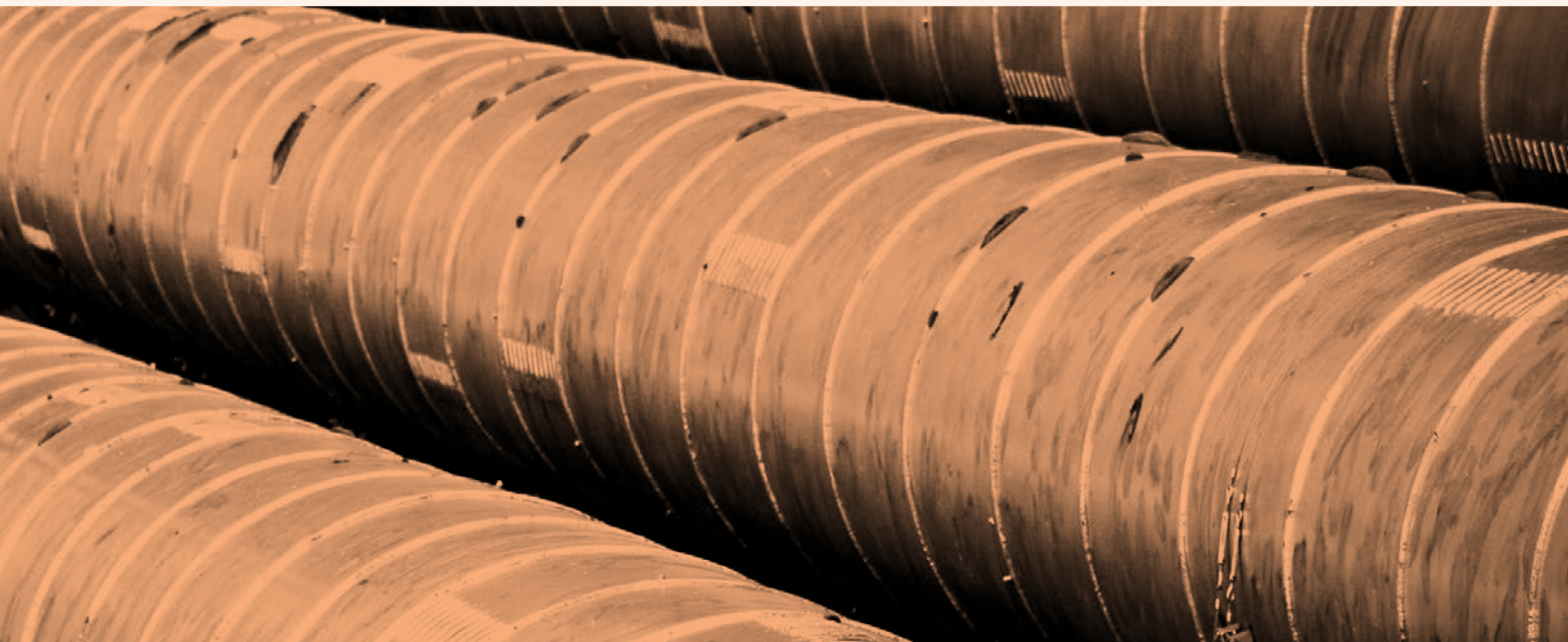
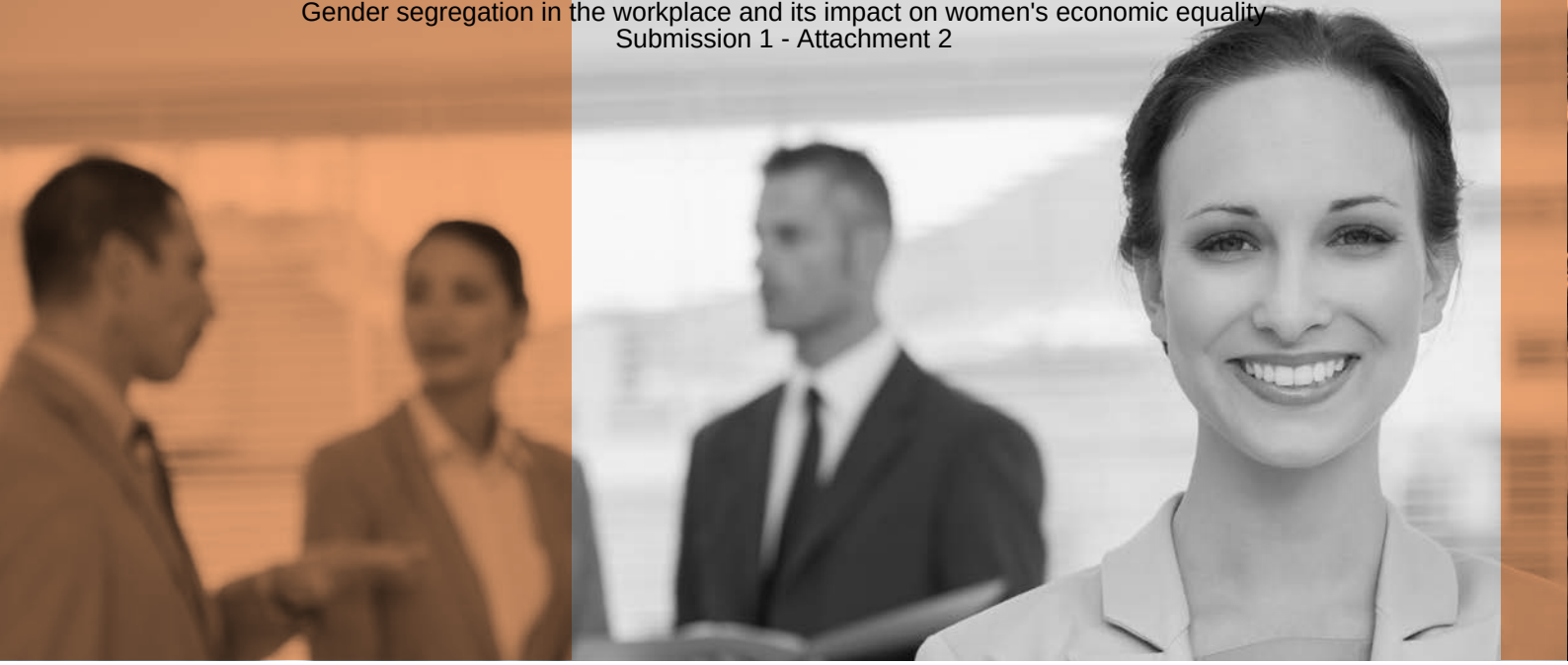




Foreword

In its The Slower Track- Women in STEM report, Professionals Australia explored professional women's career experiences as part of the STEM workforce and found a range of factors that contributed to their under-representation in the STEM professions.

As an organisation, we wanted to further explore whether the evidence about unconscious bias generally was confirmed in the STEM context. To this end, we asked our female members to tell us about their experience and understanding of unconscious bias.

The survey showed that unconscious gender bias is an important issue for the STEM professionals surveyed with the forms of unconscious bias experienced more generally also prevalent in the STEM workforce.

The findings are cause for concern in that they show that unconscious bias is highly likely to be a factor in the attrition of women from the STEM professions, the under-representation of women in senior, leadership and management roles and over-representation at less senior levels or in particular roles or disciplines across the STEM professions.

Underutilising women in the STEM professions is a significant waste of expertise, talent and investment – a focus on unconscious bias across a range of employment practices will be fundamental to addressing the disadvantage this form of bias creates. While we need to ensure we encourage more women into the STEM professions, we also need to remove the unconscious (and conscious) biases which create obstacles and barriers in recruitment, hiring, promotion and performance review processes. The fact that biases may be unconscious doesn't mean we can't improve awareness and accountability in these areas – in fact, its insidious nature means the opposite- we must take active steps to address it.

Unconscious gender bias is one of a number of factors preventing us from fully realising Australia's productivity potential and innovative capability. We hope this report will raise awareness of some of the forms unconscious gender bias can take and offer possible ways for organisations to tackle it.

Chris Walton
CEO, Professionals Australia

What forms can unconscious bias take?

Unconscious bias – also called hidden or implicit bias- comes in a range of forms. Unconscious gender bias expert Mark Toner defines unconscious bias as follows:

- in-group bias, which causes us to be more comfortable with and favour people like us, that is, of the same gender, background, experience, interests or personality type;
- the halo effect, which causes us to allow the physical characteristics of others to affect our judgement of their other qualities, for example, physically attractive people are more trustworthy;
- anchoring bias, which causes us to rely too much on an irrelevant piece of data or belief, for instance, one of the interviewers had previously hired a woman and it turned out badly;
- minority pool bias, which causes interviewers to evaluate more negatively applicants who comprise a minority of the applicant pool;
- confirmation bias, which causes us to use data and information that conforms with our beliefs and to disregard any that doesn't; and
- availability bias, which causes us to grab readily available data to make decisions rather than use all available and relevant data, which will take longer to analyse.

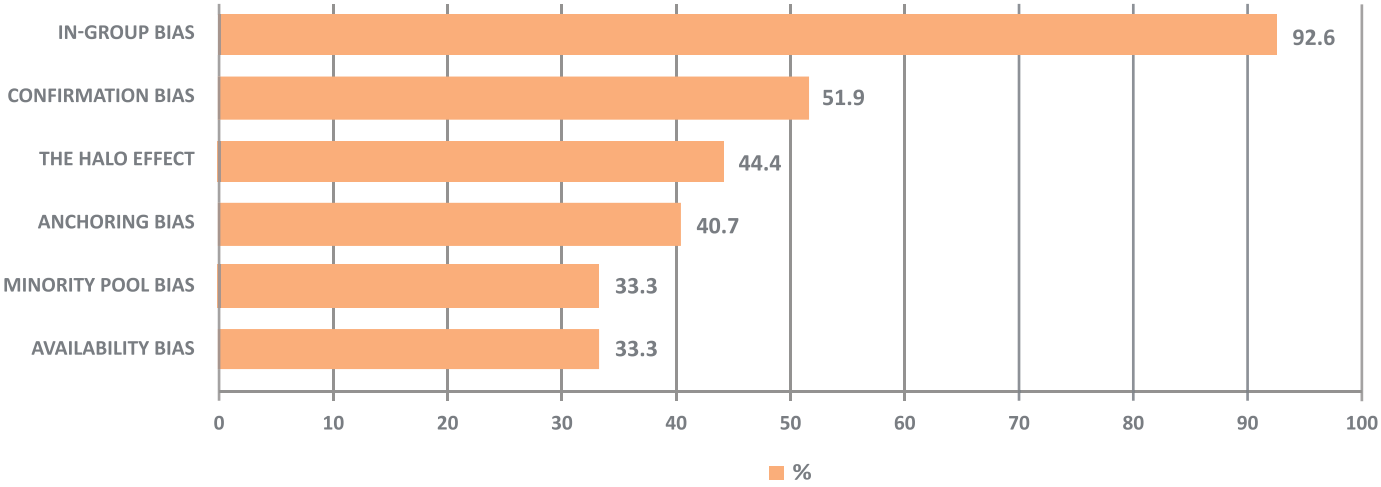
Key findings

The survey found:

- that more than 9 out of 10 respondents had experienced in-group bias in the workplace;
- that well over half had experienced confirmation bias;
- 7 out of 10 respondents agreed or strongly agreed that unconscious bias was embedded in their organisation's workplace culture;
- more than 6 out of 10 agreed or strongly agreed that unconscious bias had negatively impacted their career advancement;
- over 7 out of 10 agreed or strongly agreed that unconscious bias had negatively impacted their opportunities to network with professional colleagues;
- 6 out of 10 agreed or strongly agreed that unconscious bias had negatively impacted their earnings; and
- almost 6 out of 10 agreed or strongly agreed that unconscious bias had negatively impacted their promotion opportunities.

What forms of unconscious bias are most prevalent?

In our survey, we asked female professionals about the existence or prevalence of the various forms of unconscious bias as defined by Mark Toner. The results were as follows:



ATSE Focus magazine, Feb. 2016, p.5

Respondents reported the prevalence of the various forms of unconscious bias as follows:

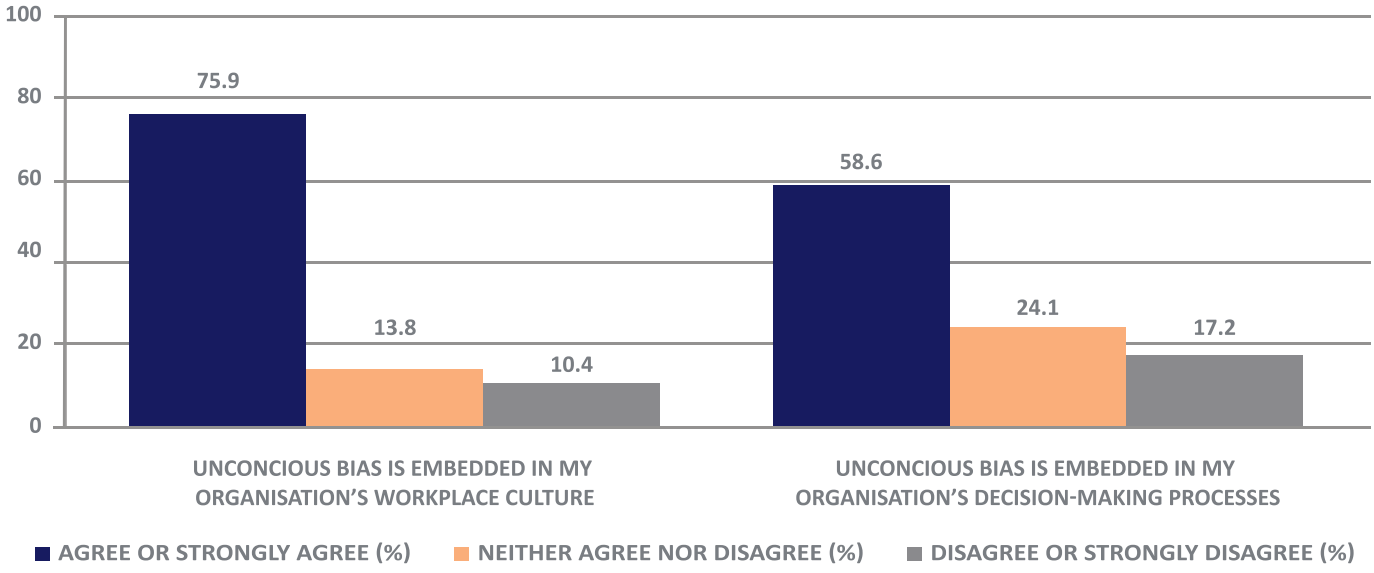
- more than 9 out of 10 respondents reported that they had experienced in-group bias in the workplace;
- well over half said they had experienced confirmation bias;
- over 4 out of 10 had experienced the halo effect;
- over 4 out of 10 had experienced anchoring bias;
- 1 in 3 had experienced minority pool bias; and
- 1 in 3 had experienced availability bias.

While the number of respondents was limited, these figures are nonetheless significant in that they provide evidence of respondents' perceptions of the prevalence of the particular forms of unconscious bias relative to other forms.

We can draw the conclusion that in-group bias was perceived as by far the most prevalent form of unconscious bias followed by confirmation bias.

How is unconscious bias manifested in the workplace?

We asked respondents about their perceptions of how unconscious bias was manifested in their workplace.

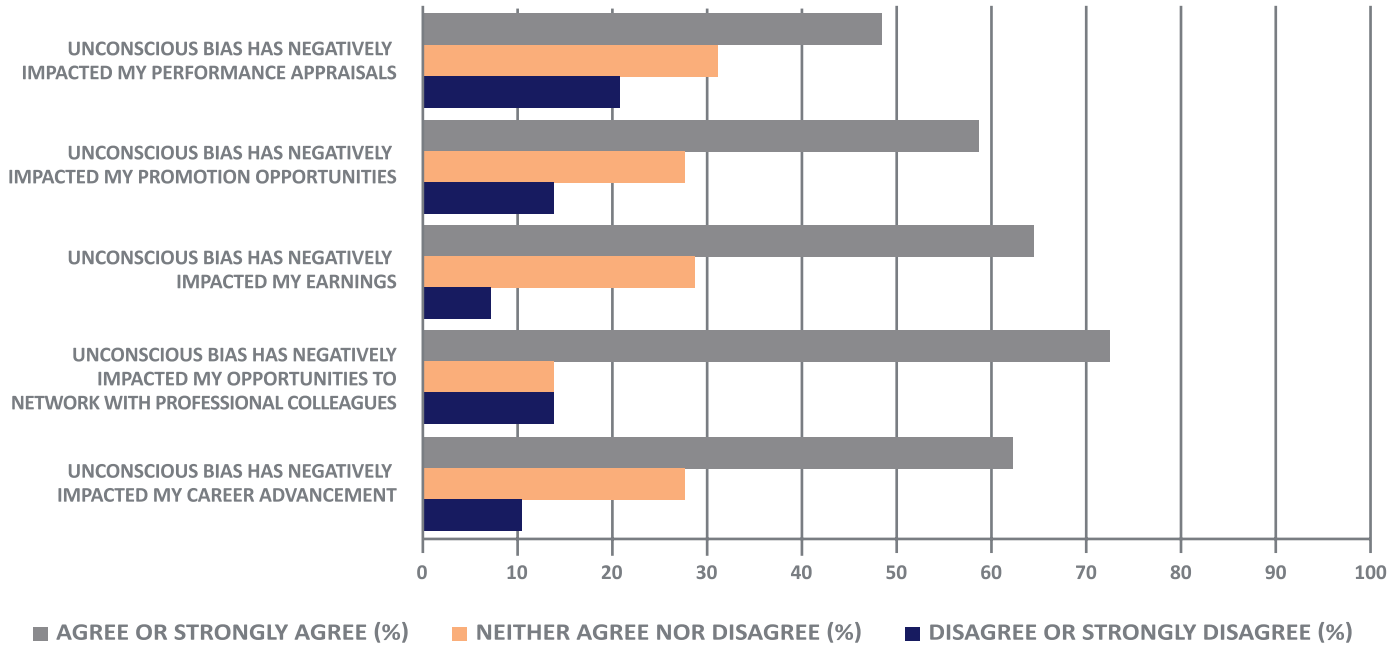


Survey responses were as follows:

- over 7 out of 10 female members agreed or strongly agreed that unconscious bias was embedded in their organisation's workplace culture; and
- almost 6 out of 10 agreed or strongly agreed that unconscious bias was embedded in their organisation's decision-making processes.

What are the effects of unconscious bias?

We asked respondents about their perceptions of the impacts of unconscious bias on their careers.



Their responses were as follows:

- 6 out of 10 agreed or strongly agreed that unconscious bias had negatively impacted their career advancement;
- 7 out of 10 agreed or strongly agreed that unconscious bias had negatively impacted their opportunities to network with professional colleagues;
- 6 out of 10 agreed or strongly agreed that unconscious bias had negatively impacted their earnings;
- Almost 6 out of 10 agreed or strongly agreed that unconscious bias had negatively impacted their promotion opportunities; and
- Almost half agreed or strongly agreed that unconscious bias had negatively impacted performance appraisal.

What did respondents tell us about unconscious bias?

In-group bias

(which causes us to be more comfortable with and favour people like us, that is, of the same gender, background, experience, interests or personality type)

The data showed that in-group bias can operate not only in terms of men being more comfortable with other men, but also by women being more comfortable with other women, and particular types of women (for example, women with family responsibilities) being more comfortable with those similar to themselves. The comments confirm that in-group bias is an issue for women in the STEM professions but that that the bias goes beyond gender bias.

- I work in an environment where people like to be with people who think like them. They are concerned about cultural fit but this actually results in similar people being recruited and promoted.
- I work with men and I have noticed that they don't feel comfortable working with me because I don't have the same interest such as sports, cars, body building, etc.
- Engineers pick male engineers and they employ themselves.
- In a situation where a technician was explaining the operation of a scanning electron microscope to a group of scientists, the men were on one side of the room and the women on the other. He directed his talk only to the men.
- I am the only woman civil engineer as a technical specialist in a group, and not a part of boy's club. I can't drink eat and smoke with them as I don't practice such habits.
- I once had an engineering manager say when introducing two new Chief Engineers who were both called John that appointing Johns was his new policy. He was surprised and horrified when I asked if I should change my name. A later boss appointed a farmer's son as Chief like himself. I have not been considered for promotion since I topped out as Principal Engineer 20 years ago.
- In management, Anglo-Saxon males are preferred.
- Males were in general seen to be more competent at engineering when I did my professional experience (and in courses).
- I was told in a performance review that I needed to consult less and that it was perhaps because I was a female I didn't know how to do this.
- I have noticed that both men and women are affected by in-group bias where managers don't choose the most competent employee for promotion, but the employee that is most similar to themselves.
- As I was one of only two women in a technical group, we were made to do all the administration tasks and thought not capable of doing the technical tasks.
- I've found that men don't like women who are more intelligent than them, who speak their mind and are strong and who aren't part of a boy's club.
- In an all-female environment, I was discriminated against and ridiculed for not favouring time with my family over spending happy hour with my female colleagues.
- [It is common for] people in meetings to not consider your view because you are a female.

The halo effect

(which causes us to allow the physical and other characteristics of others to affect our judgement of their other qualities, for example, physically attractive people are more trustworthy)

The data showed that both men and women can prefer to hire attractive people so gender bias can operate both ways. With only female respondents, the results from this survey do not allow for speculation about the comparative prevalence of the halo effect for males and females- but the data confirms that the halo effect negatively impacts women in the STEM professions.

- [There's an assumption that] pretty, fashionable female engineers can't really be hard core engineers.
- A lot of scientists like cute student girls and are more likely to offer them assistance, or opportunities. Once that time period has passed, you are less likely to be offered any roles in anything.
- Men like attractive women; women like to employ attractive men. This means sometimes you miss out.

Anchoring bias

(which causes us to rely too much on an irrelevant piece of data or belief, for instance, one of the interviewers had previously hired a woman and it turned out badly)

- I took over a job on an industrial site from an obviously disliked female employee and on first meeting an operator being told "not another f**king woman. are you here to nag us as well?". And another did not speak to me for several months as he has disliked the previous female worker.
- I have had a manager only hire women because he wants a "work wife"- clearly not based on their skills.
- In field sampling my male boss said that males were better because they could pee on the run.

Minority pool bias

(which causes interviewers to evaluate more negatively applicants who comprise a minority of the applicant/student pool)

- While studying civil engineering, I had a lecturer say that the females in the group should not help put up scaffolding, but only hand out bolts, and referred to females as "nut girls". I found this very offensive, and demanded to help put up the scaffolding. He had presumably based this on prior prejudices about female capabilities.

Confirmation bias

(which causes us to use data and information that confirms with our beliefs and to disregard any that doesn't)

- As HR Manager, I reported to a CEO who consistently drew on the data that confirmed his view of not enabling managers (mainly women) to work part time.
- When a male co-worker wasn't doing the right thing and I told my manager it was disregarded. I had proof but it wasn't looked at, as the male co-worker's word was worth more than my proof.
- [I've been in situations where] shock was exhibited when women engineers actually know more than a male.

Availability bias

(which causes us to grab readily available data to make decisions rather than use all available and relevant data, which will take longer to analyse)

- After a new manager decided on the basis of an unfinished report and a capex application written by a previous manager that I was incompetent, all my actions were interpreted through that lens. I never had a chance.
- We had a vacancy coming up on the board of the organisation. When I asked a senior member of the team if we had a gender quota, he said he was responsible for getting the last women hired and that she did not spend enough time on the board, insinuating that all women on boards would be like that.
- Yes, a Manager who did not select me to be in his team avoided all female promotion as they would be 'having babies and only wanting to work part-time in the future'.

Where to from here?

So what are the solutions? What can organisations do to help their staff deal with unconscious biases? What practices can mitigate the impact of unconscious biases on organisational decision-making?

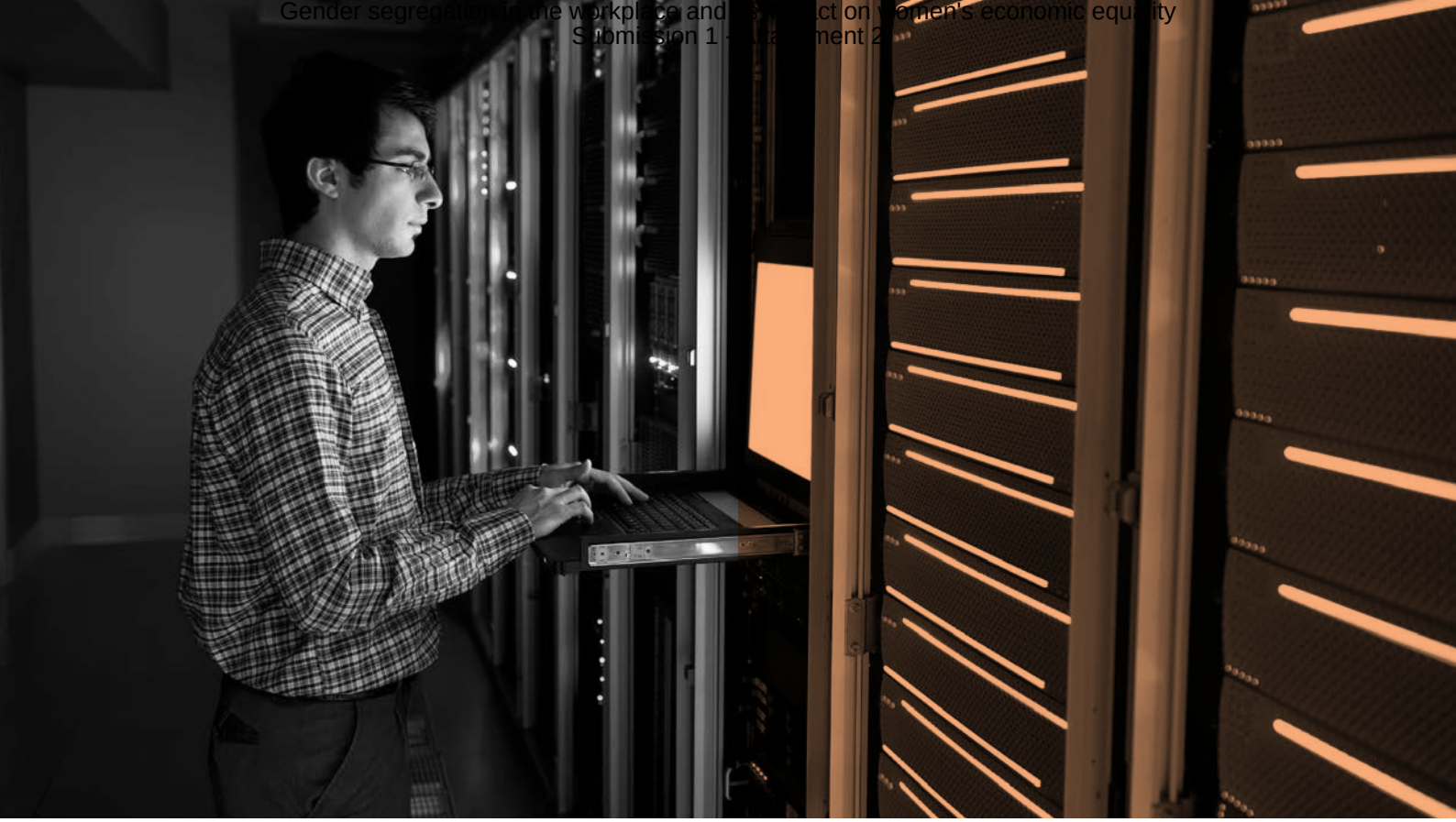
According to unconscious gender bias expert Mark Toner, there is little evidence that creating an awareness of an unconscious belief or association is sufficient to address or mitigate it. Dealing with unconscious bias is complex and different biases require different interventions to address the different causes across the areas of recruitment, interviewing, hiring, promotion and performance review. There are a range of interventions that will assist:

1. training, while not a complete solution, has an important role to play including helping people identify their unconscious biases and understand how they impact their organisational decision-making;
2. implementing reflective practices such as, for example, recruitment panels discussing their own biases before interviewing candidates, having to hand a description of biases that impact recruitment, their causes and their mitigation, and discussing ways for the panel to mitigate their biases can also play an important role ; and
3. the key change to organisational practices needed is accountability in decision-making. It is critical that proper monitoring becomes part of people management processes to ensure possible patterns of bias are identified, investigated and addressed.

Addressing the forms of unconscious bias highlighted in this report is not only a matter of justice and equity – fully realising Australia's productivity potential and innovative capability into the future will depend on ensuring a sustainable STEM skills pipeline and effectively attracting, developing and retaining our strongest and best talent in the STEM workforce. Addressing all forms of gender bias – conscious and unconscious- will be absolutely critical.

Toner, Mark (2016). Gender Issues in Business. Available at:

http://www.google.com.au/url?sa=t&rct=j&q=&esrc=s&source=web&cd=2&cad=rja&uact=8&ved=0ahUKEwjY0cCdodvNAhXCkJQKHXKgA_YQFgghMAE&url=http%3A%2F%2Fwww.gendermatters.com.au%2FLiteratureRetrieve.aspx%3FID%3D207586&usg=AFQjCNFlRQLpjLbA0jmIk3i_G3gVfVCJEQ&sig2=VUs53NziXlKSUNgZzLrdnA.



About the survey

Data presented in this report is derived from a short four-question survey of unconscious bias conducted with female Professionals Australia members. A combination of quantitative and qualitative data was collected using the survey to identify the prevalence of various forms of unconscious bias and members' particular experiences of bias in the workplace. The invitation to participate was sent out to all female members of the organisation via our regular e-mail newsletter and no incentives were offered to induce responses. In total, thirty women from the STEM professions Professionals Australia represents responded within the short timeframe (seven days) the survey was open.

While the sample is limited, our emphasis was on exploring patterns and divergences in comments about the various forms of bias in the particular context of female STEM professionals.