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## The impact of teaching from home during the covid-19 pandemic on the student evaluations of female academics

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# The impact of teaching from home during the covid-19 pandemic on the student evaluations of female academics

## Abstract

Student Evaluation of Teaching (SET) results play an important role in academic staff performance evaluation, but also in promotion processes. However, there is much evidence to suggest that the SET used in most universities across the Anglosphere has traditionally penalised female academics. As universities manage the recovery phase of the COVID-19 pandemic, they will also need to take into account the effect of remote teaching on the validity of student evaluation data. Given SET are critical to promotion success, it is important to then understand the gendered effect of remote teaching on student evaluations. We aimed to evaluate how intrusions of family life, academics' home environment and competence with remote teaching technology of female academics were viewed by students and if there were noticeable differences in SET data. We analysed 22,485 SET data over 2019 (pre-COVID, face-to-face teaching) and 2020 (COVID-lockdowns, remote teaching) for female and male academics, matched with student gender, in the multidisciplinary First Year College at Victoria University, Melbourne Australia. Our results showed that there were no differences in the score ratings for teacher gender. However, the qualitative data showed that whilst overall there were overwhelmingly positive comments for both male and female teachers, there was an increase in the negative comments on teaching style by male students toward their female teachers during remote teaching and overall more comments relating to attitude. We speculate that this would have a negative impact on the confidence of teaching-intensive female academics hindering their leadership aspirations and career progression in academia.

## Practitioner Notes

1. Addresses the need for a more nuanced investigation into the kinds of negative commentary received by female academics in SET and its potential impact on career trajectory
2. Provides insight into how specific commentary may affect women academics and their teaching practice
3. Builds on the existing international research into SET data and gender bias
4. Synthesizes new data on the impact of Covid-related lockdowns and teaching and learning into the existing literature on gender bias and SETs
5. Sets out policy initiatives based on our findings.

## Keywords

student evaluations, gender bias, female academics, remote teaching

## Introduction

In 2020, universities across Australia were required to move all their teaching online due to the rapid spread of the COVID-19 virus. This was done in haste and the follow-on effects of such a rapid move to a digital-only teaching platform have yet to be fully realised. For most academics this has meant that for the first time, they have had to teach from their private home spaces, setting up laptops, cameras and microphones in living rooms, studies and bedrooms, allowing students to have visual and audio connection with their homes. In turn, home schooling has meant that students have also been exposed in many cases, to academics' families.

Throughout the period of remote teaching, the usual cycle of Student Evaluation of Teaching (SET) continued. Mandatory use of student evaluation survey data to measure academic staff performance and quality teaching is widespread throughout universities in Australia and worldwide (Shah & Nair, 2012; Cook et al., 2021). SET surveys mean that student judgement recorded either during teaching or shortly after teaching, carries great weight in institutional evaluation of courses, subjects and individual academic performance reviews. Many problems have been identified with institutional reliance on this evaluation measure, including the relatively low response rate, often at about 30% or less (Fan et al., 2019). In addition, students' perceptions of quality teaching have been shown to be subjective and influenced by personal characteristics of the teacher, particularly gender (Cook et al., 2021; Esarey & Valdes, 2020; Lakeman et al., 2021). A 2017 study of a large French cohort of undergraduate students' evaluations found students rated male lecturers consistently more highly with an overall 'excellent' satisfaction score 20% higher than for female lecturers, even though the cohort of students studied the same material and performed equally well in final assessments (Boring, 2017). A study of over 20,000 SET surveys from the School of Business and Economics at the University of Maastricht between 2009 and 2013 found that female teachers were scored on average 37 points lower than male teachers and that this difference was driven by male students (Mengele et al., 2017). A more complex set of variables were studied by Clayson (2020), including age, perceived political beliefs, as well as gender, and he concluded that students, both male and female, have an overall preference for older male instructors (Clayson, 2020). In Australia, large scale studies show that perceived gender, race and sexuality of instructors negatively impact SET scores (Heffernan, 2021). A University of New South Wales study of over 500,000 SET surveys over a six-year period (2010-2016) studied both gender and cultural bias in SET (Fan et al., 2019). This study found that there was bias against women and staff from non-English speaking backgrounds, although this bias was not evenly distributed across disciplines. It was concluded that SET scores are a flawed measure of teaching performance based on these results, as they are less about teaching quality and more about student impression of individual teachers.

However, even with these well researched flaws in the SET system, universities regularly use them in evaluating academics for promotion. This is particularly the case in universities, like Victoria University (VU), in Melbourne, Australia, where there is a specific category of teaching-focussed academic who specialises in teaching (Subbaye & Vithal, 2016; Devlin & Samarawickrema, 2010; Vardi & Quin, 2011). Universities themselves recommend a variety of measures and evidence for teaching quality in promotion guidelines (Subbaye & Vithal, 2016). However, student feedback and SET remain very important and there is anecdotal evidence that academics themselves believe that poor teaching evaluations mean that they will not be promoted. This means that analysis of gendered perceptions of students about their academic teachers during remote teaching will have implications for the promotion prospect of women academics for some time to come.

The criteria for Teaching evidence at VU in the current promotion guidelines are as follows: 1) Design and planning of learning activities; 2) Teaching and supporting student learning; 3) Assessment and giving feedback to students on their learning and learning support activities; 4) Developing effective learning environments, student support and guidance; 5) Integration of scholarship; and 6) Support and guidance in the development of Higher Degree by Research (HDR) supervision and related research courses. Concrete examples of these criteria list student feedback in five out of six of these criteria and it is important to note that there are more criteria under Teaching, than there are in either Research or Academic Engagement and Leadership. This makes SET data an integral part of the promotion application. For female academics, not mentioning SET data is not possible within the promotion criteria at VU.

Given there is a wealth of studies that demonstrate that SET are influenced by gendered assumptions and stereotypes, this study analysed SET data during the period of home teaching and learning during the COVID-19 lockdowns. While the effect of remote teaching on student perceptions of their own learning has been the subject of emerging studies, the way that teachers and their private spaces are perceived has not had the same attention. The aim of the project was to evaluate the impact of teaching from home during the COVID-19 lockdowns on the student evaluations for female and male academics, gender-matched with students. This study specifically focused on SET data and comments collected from 2019 (pre-COVID; face-to-face teaching) and 2020 (COVID lockdowns; remote teaching) for the multidisciplinary First Year College (FYC) at VU. The FYC was established in late 2017 in response to the introduction of the innovative VU 'Block Model' in which subjects are taught one at a time over a 4-week block, in 3-hour collaborative and active learning workshops with 30 students and one teacher (McCluskey et al., 2019). This model was followed closely in remote format, with students required to be online for the 3-hour workshops, 3 times per week. The FYC has 4350 commencing student enrolments and 160 first year subjects from every course in the university. Ongoing academics and casual or contingent sessional staff from across the university, with an interest in teaching first year, were invited to apply and selected into the FYC after a competitive process (McCluskey et al., 2019). Currently the FYC is comprised of 97 permanent academic staff, 43 (45%) of which are female – of these 67% are teaching-focussed academics (TFAs) and 33% are teaching-research academics (TRAs). The majority of TFAs are early career academics, whilst the majority of TRAs are mid-late career academics. There are currently 6 academics in the professoriate within the FYC, comprised of 3 male professors at the top academic classification; and 4 female and 5 male academics at the Associate Professor level.

## **Method**

Human Ethics approval for this project was provided by the VU Human Research Ethics Committee (HRE21-145). Institutional data was provided by the Data Insights Department at VU. Data was extracted from the student enrolment system to provide information about the student's gender and course and merged with the data extracted from the student evaluation system. A total of 22,485 surveys were included from 2019-2020 (10,280 from 2019 and 12,205 from 2020). All surveys were from first year university students across all disciplines and courses in the institution. Due to the nature of the study no further demographic information was gathered and all information was de-identified.

Data extracted from the student evaluation system was related to the SET surveys that are administered at the conclusion of each teaching period. These surveys are standardised across the institution and ask students to rate their teachers on 6 questions (Table 1) along a 5-point Likert scale (1 = Strongly disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly agree) and provide

written feedback. Survey completion is voluntary. All quantitative data was collated and analysed using Microsoft Excel.

**Table 1**

*Student evaluation of teaching (SET) questions*

<b>Student evaluation of teacher (SET)</b>
Overall, I am satisfied with the quality of teaching provided by the lecturer/tutor
This teacher/lecturer gave me helpful feedback
This teacher/lecturer helped make the subject interesting
This teacher/lecturer made an effort to understand any difficulties I might be having with my work
This teacher/lecturer motivated me to do my best work
This teacher/lecturer was good at explaining things

The second component of this study involved the analysis of the qualitative data. Of the 22,485 surveys that were completed 8343 included qualitative comments, 3678 from 2019 and 4665 from 2020. Negative comments were extracted (255 for 2019, 7% of total; and 365 in 2020, 7.8% of total qualitative comments) and screened, and any comments that were not evaluating the teacher (focussed on subject evaluation for example) were excluded. A thematic analysis was then conducted whereby all negative comments were blind coded by 4 researchers. The core categories and themes were then extracted and are presented in the results section below.

## Results

### *Quantitative phase*

The survey data was initially analysed to determine how many surveys were evaluating female teachers compared to those evaluating male teachers. Survey data evaluating teaching staff who did not specify a gender were excluded from the study due to the comparatively small sample size (n=81). The frequency counts for this data are depicted in Table 2.

**Table 2**

*Frequency count for the student evaluation survey data*

	Total	Surveys Evaluating Female Teachers	Surveys Evaluating Male Teachers
2019	10280	5565 (54%)	4671 (45%)
2020	12205	6391 (52%)	5777 (47%)

There was a higher proportion of evaluations for female teachers in comparison to male teachers. To further understand how gender impacts the evaluation of teaching staff, the gender of the student

conducting the evaluation was also considered. 169 students chose not to specify their gender and were thus excluded from the study. The results are depicted in Table 3.

**Table 3**

*Frequency count matching the gender of the student and the gender of the teacher*

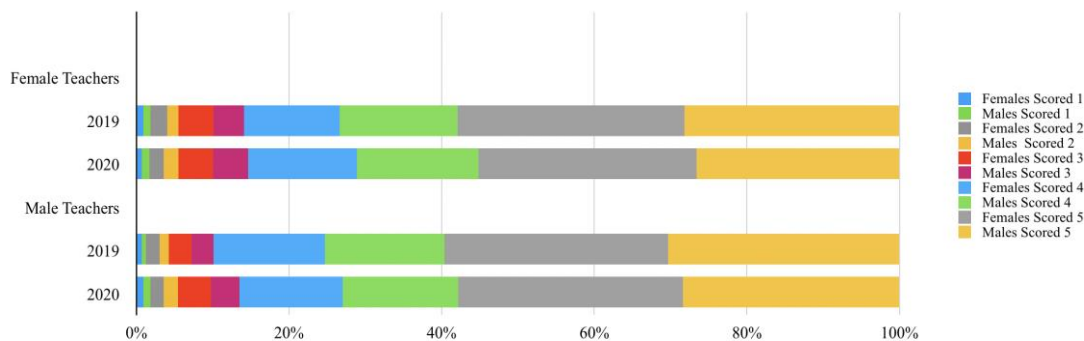
	Female Student Evaluating Female Teachers	Female Student Evaluating Male Teachers	Male Student Evaluating Female Teachers	Male Student Evaluating Male Teachers
2019	3538	2436	2019	2198
2020	4591	3493	1772	2269
Total	8129	5929	3791	4467

There was a much higher proportion of female students completing the surveys in comparison to male students. Compared to 2019, during remote learning in 2020, there was an increase in female students completing evaluations for all teaching staff. However, there was only a slight decrease in male students evaluating female teachers and no change in the number of male students evaluating their male teachers for the same period.

The next phase involved analysing the data of the SET questions separately. Question 1 explores how satisfied students are with the quality of teaching. Due to the discrepancies between the number of participants in each category, the raw scores were standardised into percentages to allow for analysis. These standardised scores are depicted in Figure 1.

**Figure 1**

*The survey results for question 1 expressed as percentages*

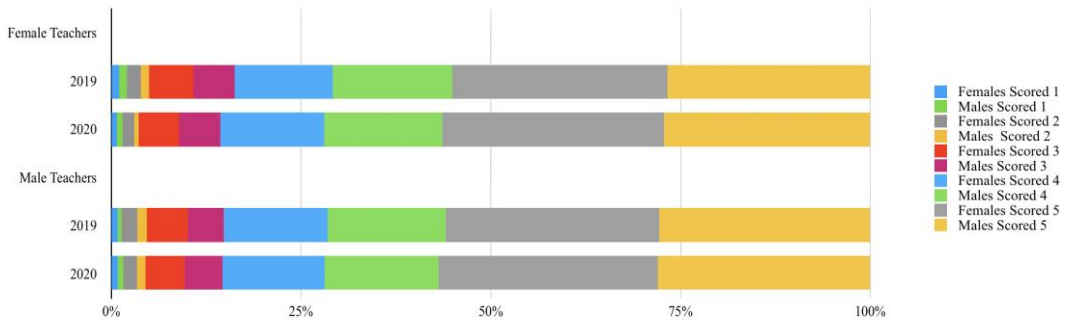


It can be seen from Figure 1 that there is minimal difference between scores from 2019 and 2020, as well as between female and male students and teacher. Independent samples t-tests yielded no significance differences.

Next, we analysed SET question 4, which asks students to rate whether their teacher made an effort to understand the difficulties they may be having with their studies. This question was incorporated as it focuses on the emotional aspect of teaching and empathy. The findings were standardised and are presented in Figure 2 below.

**Figure 2**

*The survey results for question 4 expressed in percentages*

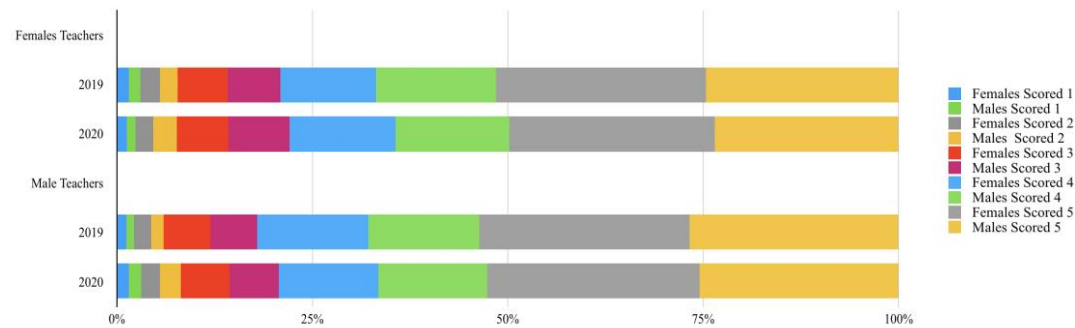


Similar to the Figure 1, the data here is remarkably consistent regardless of the year of study, the gender of the student or the gender of the teacher. Unsurprisingly independent samples t-tests yielded no significant differences.

Finally, we analysed the results of Question 3, which asks students to rate the teacher's ability to make the content of the subject interesting. Data was converted to percentages and is presented in Figure 3 below.

**Figure 3**

*The survey results for question 3 expressed in percentage*



Similar patterning was observed as with the previously analysed questions. There were once again no significant differences in scores indicating that overall, the mode of delivery, the gender of the student, and the gender of the teacher have no influence on the quantitative SET scores.

### Qualitative phase

Word clouds produced from the positive comments pertaining to female and male teachers for 2019 and 2020 combined, are shown in Figure 4. Students described the male and female academics comparably, using supportive and appreciative terms.

**Figure 4**

Word clouds depicting the key words drawn from qualitative data for male (left) and female (right) teachers respectively



Next, we mapped the small percent of negative comments to themes. The 2 main themes which emerged from coding the negative comments were: *teaching style* and *attitude*. Types of comments coded to *teaching style* include ‘hard to understand’, ‘unengaging’, ‘boring’. Comments coded to *attitude* include ‘rude’, ‘aggressive’, ‘not helpful’, ‘unprofessional’. In 2020 perhaps unsurprisingly a new set of *teaching style* comments emerged about the management of online classes, the technology, and the use of zoom. Comments from students in this category included ‘technologically incompetent’, ‘seemed not good at zoom’, ‘lacked presentation skills on zoom’, ‘internet would cut out’. A summary of the two main themes is shown in Table 4.

**Table 4**

Themed negative student comments for male and female academics

	2019 Female Students	2019 Male Students	2020 Female Students	2020 Male Students
<b>Females Teachers</b>				
Comments re teaching style	67 (66%) N = 101	14 (61%) N = 23	95 (76%) N = 125	64 (91%) N = 70
Comments re attitude	46 (46%) N = 101	14 (61%) N = 23	50 (40%) N = 125	9 (12%) N = 70
<b>Male Teachers</b>				
Comments re teaching style	62 (82%) N = 76	43 (78%) N = 55	56 (80%) N = 70	87 (87%) N = 100
Comments re attitude	15 (20%) N = 75	16 (29%) N = 55	18 (25%) N = 70	8 (8%) N = 100



A chi-square test of independence was conducted to determine whether a significant association was present:  $X^2(6, N = 664) = 69.95, p < 0.05$ . This indicates that in 2020 there was an association present between male students and the frequency of negative comments for female teachers in comparison to male teachers for both conditions. In contrast, female students were fairly consistent in the frequency of negative comments, irrespective of staff gender or mode of delivery. Interestingly, we only identified a few comments from female students for female teachers which related to the home environment however, we did not identify any equivalent comments for male academics. Furthermore, comments on teaching were significantly more common than comments on attitude.

## Discussion

In early 2020, universities throughout the world were required to modify their teaching methodologies in response to the COVID-19 pandemic. In response to the government's strategy to isolate populations and reduce movements through the instigation of stay-at-home orders, higher education institutions, like many other organisations, were required to quickly convert their face-to-face classes to online and remote modes of delivery (Kelly & Lock, 2021). These adapted versions of remote learning were usually based on digital platforms, including video conferencing software. The widespread availability of these technologies meant that combinations of asynchronous and synchronous teaching were easier than they had been in the past. The effects of this rapid and widespread change in teaching methodologies are now being evaluated in studies from throughout the world and in different disciplines (Rapanta et al., 2020; Garris & Fleck, 2020).

This study aimed to investigate the impact that remote teaching had on the SET for staff who identified as female in comparison to teaching staff who identified as male and matched with the gender of the student. Interestingly, the quantitative data yielded no gender differences and no differences between face-to-face and remote teaching. Moreover, consistently the results were positively skewed with on average 80% of staff scoring a 4 (agree) or 5 (strongly agree) on the likert scale. These findings contradict those which have been presented in the past. Boring (2017) for example found that students consistently rated male teaching staff 20% higher than their female counterparts.

The majority of qualitative findings in this study were highly positive in nature. The findings, in particular those from 2020, support the findings of Martin (2020), who observed that in general, students were very appreciative of the effort of staff with the transition to online. This is seen in our results where comments were overly positive and in line with the favourable quantitative results. Many studies show that generally students appreciated the efforts that instructors have put into teaching remotely through the pandemic, although external economic and psychological stressors negatively impacted on their perceptions of their learning (Al-Salman & Haider, 2021; Riley et al., 2021). Factors that influenced this evaluation included individual student feelings of belonging and connectedness (Besser et al., 2020). In Australia, a high-level study of 2020 student evaluations from 118 higher education providers found that the often 'heroic' effort of university teachers put into transitioning to remote learning was recognised and appreciated by students (Martin, 2020). Aspects of online remote teaching appreciated by students were flexible access to teaching materials, academic help and advice and the extra time that teaching staff allocated to ensure student well-being. Measures of approachability and warmth are likely to be even more important to students in the stressful environments of the global pandemic (Pagoto et al., 2021).

Even with the additional supports available from teaching staff, studies are emerging showing that the shift to online learning in the midst of the global emergency resulted in increased study-related stress for university students (von Keyerlingk et al., 2020). These study stressors are increased again for students who are first in family to attend university and more so, for students from culturally diverse migrant or refugee backgrounds, related to poor access to technology, financial pressure and loss of connectedness to in person peer and university support systems (Mupenzi et al., 2020). These smaller studies are confirmed by analysis of the 2020 Australian Government national survey of higher education which showed a sharp decline in all high-level indicators of student-rated student experience (Tice et al., 2021).

However, even though there was a majority of positive comments from students about teaching staff in the sampled SET, there was a significant increase in the number of negative comments made by male students on the teaching style of the female academics during the COVID-19 lockdowns. The types of negative comments that increased during 2020 were those which related to the way that teachers used or were at ease with the technology required for remote learning, teaching styles that were considered inappropriate for adult learners, and teaching attitudes that were considered uncaring or rude.

Some comments related to use of technology, such as

*“she struggled more than my other teachers on zoom” [male student:female academic, 2020]*

*“could benefit from additional training on how to use zoom” [male student:female academic, 2020]*

*“She seemed completely technologically incompetent, which for a University teacher is just unacceptable”. [female student: female academic, 2020]*

This may reflect that students, particularly male students did not expect that their female teachers would be able to manage the technology and so were critical of them when there were technological issues with zoom.

There were other comments from students about their teachers that indicated differences in expectations and attitudes towards female and male teachers. In both 2019 and 2020, there were negative comments about the teaching style of female academics that indicated students may be bringing preconceived ideas based on their own experiences with high school teaching. These were coded as ‘condescending’. Some of these comments included:

*“I felt like I was back in high school” [female student: female teacher 2019]*

*“did not feel like an adult learning environment” [female student: female teacher, 2019]*

*“She treats us like a bunch of elementary school students” [male student: female teacher, 2019]*

It is possible that these students’ experience of female teachers in the past meant that they viewed their university teachers through a similarly negative lens when their expectations of university level were not met.

Negative comments about female teachers' attitudes focus more on attributes such as 'rude' or 'unhelpful'. This suggests that some students expect their female teachers to be more caring or helpful than their male colleagues and so were disappointed when their expectations were not met:

*"brushed over the work – aggressive" [male student: female teacher, 2019]*

*"When I asked for help she didn't help" [male student: female teacher, 2020]*

*"She was disorganised, unhelpful and rude" [female student: female teacher, 2020]*

*"I didn't get any advice or help during my assignments" [female student: female teacher, 2020]*

While these comments about attitude were similar from both male and female students towards their female teacher, male students made negative comments far more often about female teachers' knowledge and discipline competence.

*"She had no idea" [male student: female academic, 2020]*

*"concepts were not fully explained and key concepts were left out" [male student: female academic, 2020]*

These comments, although few in number, do correlate to previous studies that have found that male students did not respect that their female teachers were knowledgeable about the content of their classes (Boring, 2017).

How might these negative comments impact on the confidence and self-efficacy of a primarily teaching-focused female academic and her leadership and career aspirations? Literature on self-esteem and negative stereotyping suggests that there is a measurable negative effect on self-belief about employability for women and minority groups when exposed to negative stereotyping (Owuamalam & Zagefka, 2014). A study that focused on women's leadership aspirations found exposure to negative stereotypes undermined women's confidence in leadership tasks (Davies et al., 2005).

While the present study did not have the scope to measure the effect of negative SET feedback on individual academics, it is well-known that academia remains a field where 'imposter syndrome' remains rife (especially for female academics). Imposter syndrome is 'fear of exposure as a fraud in one's abilities and an inability to internalize accomplishments and successes' (Laux, 2018). Research shows that feelings of imposter syndrome actively hold women back from seeking promotion and putting themselves forward for leadership positions (Laux, 2018). Teaching from a home environment may aggravate these feelings of imposter syndrome as the teacher is taken out of the professional workplace setting. Studies show that women in Australia spent more time during lockdown looking after their children. A report commissioned by the Australian Institute of Family Studies (AIFS) showed that 52% of respondents remarked that in heterosexual families it was usually the mother who did the bulk of the caring with only 11% of the respondents claiming it was solely the father (Hand et al., 2020). Teaching remotely via video conferencing allows learners to see the teacher in their home environment. This is a space that is inherently informal and private compared with the lecture hall and seminar room. Learners can potentially see the private spaces, decoration, plants, pets, children and spouses of teachers in ways that are unimaginable in the

professional setting of the university. Female students, but no male students, commented about the female academic's home environment, including being interrupted by children and pets:

*"I also understand it's a hard time having to be at home and having family home however it was distracting when her child would interrupt her." [female student: female academic, 2020]*

*"While doing online class X's husband (guess) kept doing house work in the background and I can hear him drilling for 5 mins and it was just distracting. And this happened every session with her." [female student: female academic, 2020]*

*"your dog is very loud but it was fun seeing u teach while at the same time maintaining your pet." [female student: female academic, 2020]*

There were no such comments made for the male academics.

The results of this study showed that the Australian University remains a gendered domain. While there is little in the way of SET scores in this particular dataset to show a bias based on scores towards male academics, a clear bias could be seen in the written components of the SET. Female teachers were 50% more likely as their male colleagues to receive negative feedback based on their teaching style during remote teaching. In addition, female academics were more likely to receive negative comments about attitude from students, irrespective of gender or mode of delivery. SET are designed so that students can comment explicitly on teaching practice in the hopes that the teacher will take on this feedback to improve their work. That is, the commentary from SET surveys is supposed to be educative and constructive for the teacher receiving them. Nowhere in the SET are students encouraged to discuss a teacher's attitude as this is rather more ephemeral, or a part of a teacher's personality, and should have little or no bearing on job performance. What can be seen in the negative comments about attitude is the gendered assumption that female teachers should be more caring and more helpful than their male colleagues. This idea no doubt comes from both gender stereotypes of female as 'nurturing' as well as the differences found at different school levels: where pre-primary education is dominated by care and tertiary education is supposed to shift away from the teacher as carer, to the teacher as a disciplinary authority. It is clear from the negative comments that some students found this shift difficult to navigate.

Thus the academy remains profoundly gendered and within teaching and learning spaces a 'double-bind' exists where normative 'gendered expectations (that women be nurturing and supportive) conflict with the professional expectations of a higher-education instructor (that they be authoritative and knowledgeable)...[which when transgressed] can also result in student disapproval' (MacNeill et al., 2015). Additionally, the cohort of students needs to be factored into this, especially at a university such as VU where students tend to be first-in-family, culturally and linguistically diverse and predominantly from non-English speaking backgrounds. This difference in what the renowned sociologist Pierre Bourdieu has termed *cultural capital*, may also play a role in what students expect from tertiary education.

## **Recommendations**

Given the ways in which SET surveys are still used within the academy, particularly their importance in promotion applications, the negative aspects engendered by poor feedback from students needs to be addressed. There is a causal relationship between women being promoted and women ascending up the academic ladder into positions of leadership. Moreover, it remains unclear

as to who is reading the SET data and for what purpose. It is entirely plausible that senior managers may withdraw their support for an individual academic's promotion based on their own reading of that staff member's SET comments. Given the centrality of SET data in career development, we would make the following recommendations:

- That an amnesty is placed on negative comments in SET data from 2020 and 2021 (due to COVID) by line managers and members of the promotion panels;
- That a guide is created for people reading SET data - individual staff members, their line managers and senior managers, as well as members of promotion panels - so that they are aware of the gendered issues around SET;
- That a workshop be developed for female academics who have encountered negative SET feedback that includes strategies on how to deal with them - this may include mental health training, sharing the purpose of the SET and the feedback with students, focusing on the positive comments rather than the few negative comments and citing the literature in promotion applications; and
- That implicit gender bias training for students be developed, to be completed at the commencement of each year or prior to the start of the first SET rating period and that cautionary information be added in the instructions to students undertaking SET.

We would also suggest that the data we have encountered in this study needs to be replicated in a number of ways, such as across different year levels (including post-graduate study) as well as across different academic institutions. The next critical step in this work would be to interview female staff and ask them exactly what impacts negative SET scores and comments have had on their career aspirations and leadership ambitions.

### ***Limitations***

As teachers were de-identified, we were unable to separate out the sessional staff from the permanent staff, the latter of which have undergone substantial amounts of professional development on teaching and learning over the last 3 years. We also recognise that the staff profile of the multidisciplinary FYC at VU, with a high proportion of TFAs may not be typical of Faculties at other universities and this may have affected the data. Future studies will evaluate the SET from staff teaching across second and third year in the university and investigate correlations between teachers, student demographic and course profiles.

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