Early- and Mid-Career Researchers: A Workplace Culture, Career Development, and Mental Wellbeing Survey

A joint project of the Early Career Research Network of the Faculty of Medicine, Dentistry and Health Sciences at the University of Melbourne; and the Faculty of Medicine, Nursing and Health Sciences and the Faculty of Pharmacy at Monash University.

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We acknowledge the Wurundjeri, Bunurong, Yorta Yorta and Dja Dja Wurrung people, on whose land we work. We pay our respects to their Elders, past, present, and emerging.

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Executive Summary

Background

Early and mid-career researchers (EMCRs) represent a large and important part of the academic workforce within universities. This group, broadly defined as those who are within 10 years (full-time equivalent) of PhD completion, face significant challenges related to job insecurity, high workload, competitiveness, and inexperience navigating career progression. Recently, reports of negative workplace behaviours have also surfaced. These are key work-based contributors that may manifest in a disproportionate mental health impact within the EMCR cohort, likely exacerbated by the current COVID-19 pandemic. Our project aimed to identify and quantify the experiences of EMCRs with a focus to collaboratively develop solutions that may be implemented in the workplace to improve workplace culture and job satisfaction.

Objectives and Methods

We aimed to examine workplace drivers of poor mental health among health sciences EMCRs within the Faculty of Medicine, Dentistry and Health Sciences at the University of Melbourne, and the Faculty of Medicine, Nursing and Health Sciences and the Faculty of Pharmacy at Monash University based in Melbourne, Australia, between November 2020 and January 2021. Standardised workplace satisfaction and mental health instruments were employed to capture quantified evidence, together with constructed questionnaires specific to the academic workplace. Secondly, we sourced best-practice solutions from EMCRs for promoting mental health and wellbeing to further explore facilitators and barriers for their implementation. Ethics approval was obtained from the University of Melbourne Human Research Ethics Committee.

Results

Of the 320 participating EMCRs across the two universities, 284 completed enough items to be included in analyses. Participants endorsed heavy workloads (89.5% structurally working overtime, 54.8% report moderate-high burnout), job insecurity (50.7% had contracts with less than 12 months remaining) and an effort-reward imbalance (for 68.0% of participants their efforts outweighed the rewards). Many had exposure to negative workplace behaviours, such as bullying (46.6%), racism (22.5%) and sexism (49.8%) in the last 12 months. Observations of academic misconduct was reported by nearly one in five participants. There is potential to improve the level of workplace support, such as internal funding schemes, grant support and leadership courses. Most participants were either very (13.5%) or somewhat satisfied (47.0%) with their workplace culture. In our sample, the prevalence of depression and anxiety symptoms was similar to the prevalence in the general Australian population at the time. However, prevalence was higher among junior staff, those working overtime, and with job insecurity. The COVID-19 pandemic impacted a range of research activities and outcomes. Subgroups of the EMCR community, including women and those with caring responsibilities, were disproportionately affected.

Conclusion

Universities and Faculties should consider the findings, and solutions offered by participants as an opportunity to improve workplace culture. Interventions and policies to address the issues identified in this survey should be co-designed and developed collaboratively between Faculty staff and a diverse and representative group of EMCRs. Priorities should focus on providing a stable and safe workplace where accountability for inappropriate behaviour is visible, where people's long-term personal and professional development is optimally supported, and where workloads and expectations are regularly and adequately agreed on collaboratively.

This study presents an opportunity and call for action to improve workplace culture and well-being of EMCRs. This comes at a time where post-COVID-19 workplace modifications represent a critical opportunity for reshaping the academic workforce experience.

1. Introduction

Individuals in the academic workforce function within a uniquely challenging system that can be characterised as competitive, demanding, and unstable[1]. This is intensified in the EMCR's context of a major employment bottleneck[2]. Additional to personal costs, poor mental health in EMCRs has significant workforce implications due to burnout or drop-out, limiting progress towards scientific advances. Further, an increasingly competitive and metric-based value system has implications for the ability of EMCRs to engage with sufficiently rigorous methodology and practices. Understanding EMCR mental health and the work-based contributors is therefore of utmost importance for universities to improve both employee health and scientific output.

Internationally, evidence suggests that academic researchers face significant challenges related to job insecurity, high workload, fierce competitiveness and lack of support to navigate career progression – key workplace characteristics where interventions are plausible[3–5]. Current reports exploring mental wellbeing in the research environment are limited by: 1) a focus on graduate students;[6] 2) examining stress rather than mental health; 3) work that combines non-academic staff and researchers across career stages; and 4) the use of poorly validated measures[7–9]. Regardless, early data suggest that 75% of EMCRs experience negative symptoms related to their mental health,[9] and highlight critical contributing factors beyond job insecurity that include diversity of experience, discrimination, and sexism[9–14].

Australian EMCRs have reported low job satisfaction associated with poor workplace culture, lack of support from institutional superiors, poor leadership and management, and lack of work-life balance[12], where 78% had considered a major career change[15]. The Australian Academy of Science ECR Forum, the Australian Brain Alliance EMCR Network and the Australian National Health & Medical Research Council (NHMRC) produced independent research quality assessments that emphasised the need for the improvement of research culture, power imbalances between EMCRs and supervisors, mental health, and bullying, to facilitate better research practices and minimise productivity loss[16,17]. Yet, there is a lack of knowledge or metrics on how or which workplace interventions can most effectively target these factors. Furthermore, the COVID-19 pandemic may have worsened the situation for EMCRs, particularly in the state of Victoria where COVID-19-related restrictions have been longer and stricter compared to other regions in Australia.

This study aimed to address the gaps outlined above in a Victorian cohort, by exploring workplace culture and mental health within a sample of well-defined, health-research-based EMCR's across the Faculty of Medicine, Dentistry and Health Sciences (MDHS) at the University of Melbourne, and the Faculty of Medicine, Nursing and Health Sciences (FMNHS) and Faculty of Pharmacy at Monash University. This report quantifies mental health status of EMCRs– a significant gap in evidence necessary for formulating EMCR-targeted policies, and directly sources solutions from EMCRs to produce key recommendations to inform faculty-driven decisions. Beyond local strategies, this study represents a key step in generating quantifiable evidence and opportunity for longitudinal measures of success, and a call for actions for improving workplace culture and mental health and well-being of EMCRs. Additionally, this report addresses COVID-19 impacts on EMCRs and raises a key, timely opportunity along with workplace adaptations triggered post pandemic, to introduce reforms guided by best practices to improve the early academia experience.

2. Methods

2.1. Participants

Participants were recruited via Faculty and EMCR network mailing lists across FMDHS at the University of Melbourne, and the FMNHS and Faculty of Pharmacy at Monash University. Participants who were employed by one or more of these Faculties, and self-classified as EMCRs under 10 years (full-time equivalent) post-PhD completion were eligible. The survey was open between October 2020 and January 2021.

2.2. Design and Materials

The survey employed both open and closed-ended questions (see Supplementary Material). The items in the survey consisted of demographic items, previously validated scales, and additionally created questions if no suitable tools were identified elsewhere to capture issues uniquely relevant to the target population. These items were constructed under seven main domains: Workplace Culture; Academic Misconduct; Job Satisfaction; Sexual Harassment and Racism; Bullying; Mental Wellbeing; and COVID-19 Impact. The survey was administered using Qualtrics online survey software. The questionnaire was developed with inputs from experts in mental health and workplace bullying and sexual harassment. Ethics approval was provided by the University of Melbourne Medicine and Dentistry Human Ethics Sub-Committee (2057562) and participants consented for participation.

2.3. Instruments

The 16-item *Effort-Reward Imbalance Scale* has separate items on effort (e.g., overtime, constant time pressure, et cetera) as well as rewards (e.g., support, I am treated fairly)[18]. The average effort score is divided by the average reward score, with a total score of 1 or more indicating an individual receiving greater rewards than effort put in, and scores below 1 indicating greater effort than reward.

The *Short Negative Acts Questionnaire* assesses subjectively experienced exposure to occasional and frequent workplace bullying, using cut-off scores of 12 and 16, respectively[19]. The 6-item *Ethnic Harassment Experiences* assessed experiences with racism[20]. The *Sexual Experiences Questionnaire* assesses experiences that fall under four categories. Sexist hostility: gender harassment, discriminatory experiences based on one's sex (sex discrimination); sexual hostility; harassment experiences that are explicitly sexual in nature (offensive sexual remarks or stories); unwanted sexual attention: sexual behaviours including touching and sexual imposition including assault; and sexual coercion: threats and bribes for sexual favours[21,22]. Separate items asked participants about experiencing and witnessing sexual harassment.

The *Copenhagen Burnout Inventory* – 7-item Work Related Burnout subscale was used to assess 'moderate burnout' (scores of 50 to 74) and 'high/severe burnout' (scores of 75–100)[23,24]. The *Patient Health Questionnaire 9* (PHQ9) measures overall depression symptoms over the last two weeks. A cut off of >= 10 can be used to identify people who likely have a Major Depressive Disorder (MDD), where a score between 5-9 classifies mild depression, and 0-4 classifies minimal depression[25–27] . The *Generalized Anxiety Disorder 7* (GAD7) measures overall anxiety symptoms over the last two weeks. 5, 10, and 15 represent cut-point scores for mild, moderate, and severe anxiety, respectively[28]. The PSS4 measures global perceived stress over the last month, where a higher score denotes more perceived stress[29–31].

Specific questions that apply uniquely to the workplace context and academic misconduct as well as the COVID-19 impact of EMCRs were constructed by the team based on similar workplace surveys[32].

2.4. Data Analysis

Raw data were imported to statistical software programs SPSS, R, and Stata for descriptive analysis and for comparisons between subgroups (such as by gender, carer status, staff level, university, cultural background). Validated tools were scored according to published scoring guidelines. The descriptive analysis was stratified when variations in outcomes by sub-groups were either considered theoretically important based on literature, or, when marked variations were confirmed. In addition, we quantified measures of correlation and association using Pearson correlation and t-tests selectively for mental health outcomes and workplace satisfaction to examine sub-group differences, but we do not report p-values to avoid misleading causal inference on the effect of exposures on outcomes. Open-ended responses in the survey were analysed through a process of content analysis using deductive and inductive coding to create categories. Quotes supporting the content analysis are presented in blue boxes throughout the report. To protect confidentiality, we did not provide any identifying information regarding institution or staff level.

3. Results

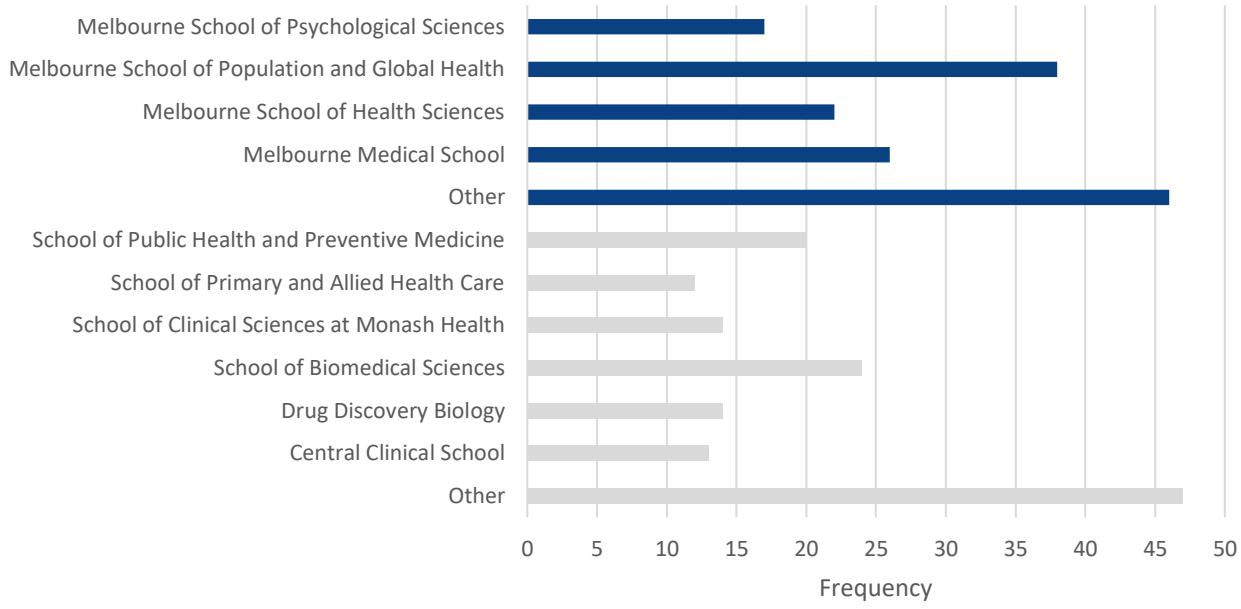
3.1. Demographic and Employment Variables

Overall, we had 320 participants entering the survey, with 284 participants completing at least 80% of items, which is the sample we report on here. This sample included 140 participants from the University of Melbourne, 134 participants from Monash University, and 10 participants who worked across both Universities.

3.1.1. Universities, Schools and/or Departments Represented

Figure 1.

Participants Self-reported Academic Affiliations Per School and/or Department at Monash University and The University of Melbourne



Note. N = 284. Figure shows the number of participants who identified as affiliated with schools and/or departments at Monash University and the University of Melbourne. Multiple responses were permitted. Blue bars represent University of Melbourne; Grey bars represent Monash University. For ease of visualisation, schools and/or departments affiliations comprising less than 4% of the relevant university subsample were collapsed into the one category (Other).

3.1.2. Sample Demographics

Table 1.

Summary of Key Demographic Information for the Sample

Variable / response category	Frequency	Valid percent
Age range		
26 - 30 years	28	9.9%
31 - 35 years	96	33.8%
36 - 40 years	75	26.4%
41 - 45 years	43	15.1%
46 - 50 years	17	6.0%
Over 50 years	18	6.3%
Gender		
Female	202	71.1%
Male	79	27.8%
Prefer not to say	1	0.4%
Sexual orientation		
Heterosexual	217	76.4%
Homosexual, bisexual and other	38	13.4%
Prefer not to say	24	8.5%
Ethnicity		
Aboriginal / Torres Strait Islander	3	1.1%
Asian	38	13.5%
Caucasian	201	71.0%
Indian subcontinent	13	4.6%
Other	35	12.8%
English as first language		
No	74	26.1%
Yes	208	73.2%
Permanent resident / citizen		
No	31	10.9%
Yes	250	88.0%
Carer responsibilities		
No	133	46.8%
Yes	140	49.3%
Years since completion of research higher degree		
< 2 years	64	22.5%
2 to < 4 years	56	19.7%
4 to < 6 years	56	19.7%
6 to < 8 years	46	16.2%
8 to < 10 years	32	11.3%
≥ 10 years	26	9.2%
Employment level		
Level A	79	27.8%
Level B	117	41.27%
Level C	72	25.4%

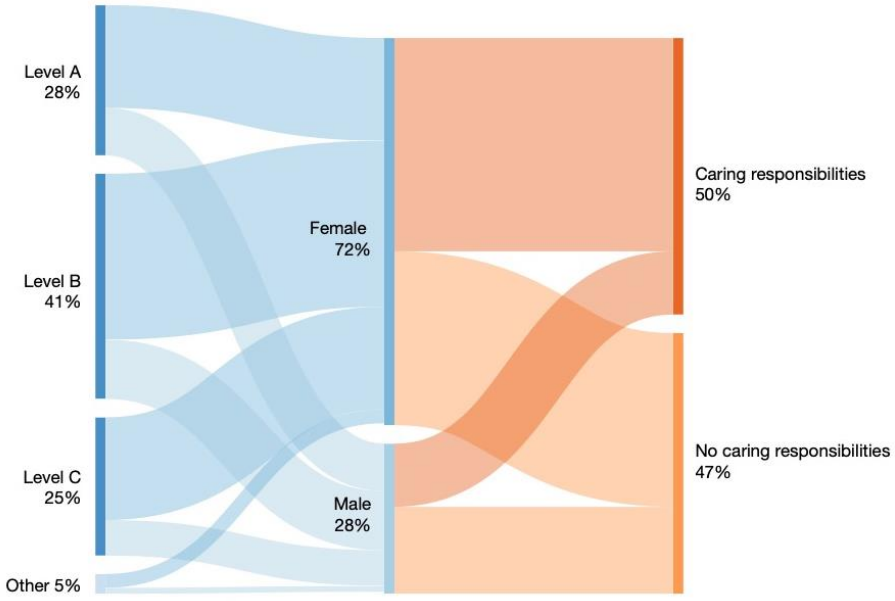
Note. N = 284 but some items had missing data. For ease of visualisation some response categories were omitted from this table. Except for the "Aboriginal / Torres Strait Islander", and "Indian

Subcontinent" response categories, response categories for ethnicity representing less than 5% of the sample were collapsed into "Other". Across all variables excluding gender, all other response categories representing less than 5% of the sample were excluded from this table.

Of the total sample, 11 participants identified as having a disability (3.9%). These individuals scored the extent their university accommodates the needs of individuals with disability, on a scale of 1-7 with an average score of 3.5.

Regarding participants' job family: 19 worked as clinician researchers (6.7%), 9 engaged in laboratory-based research and teaching (3.2%), 57 engaged in non-laboratory-based research and teaching (20.1%), 94 engaged in laboratory-based research only (33.2%), and 90 engaged in non-laboratory-based research only (31.8%).

Figure 2.
Alluvial Plot of Academic Level in Relation to Gender (Female, Male and Other/Did Not Answer) and Caring Responsibilities



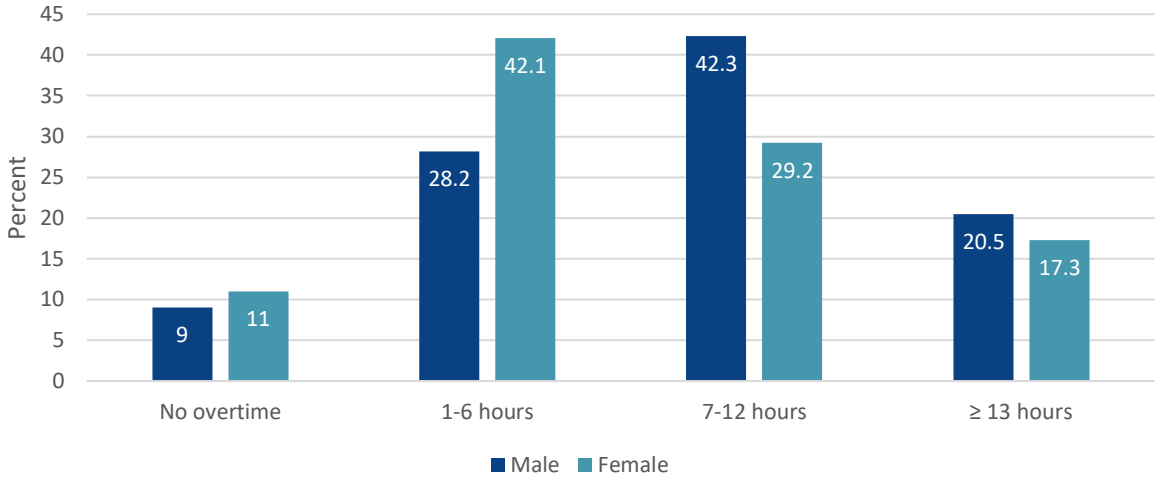
Note. Of 284 participants, 28% (79/284) were Level A, 41% (117/284) were Level B, 25% (72/284) were Level C, and approximately 72% (202/281) identified as female and 28% (79/281) identified as male, shown here in relation to academic level. In relation to carer status, participants were asked 'Do you have carer responsibilities?', with approximately 50% (140/282) selecting yes and 47% (133/282) selecting no (the remainder preferred not to say), shown here in relation to identified gender.

3.2. Workplace Culture

3.2.1. Overtime and Job Insecurity

Almost nine in ten (89.3% of 281) participants reported regularly working overtime (considering full time is 40 hours per week). About half (51.2%) worked on average 7 or more hours of overtime per week, of which 18.2% worked more than 13 hours of overtime per week.

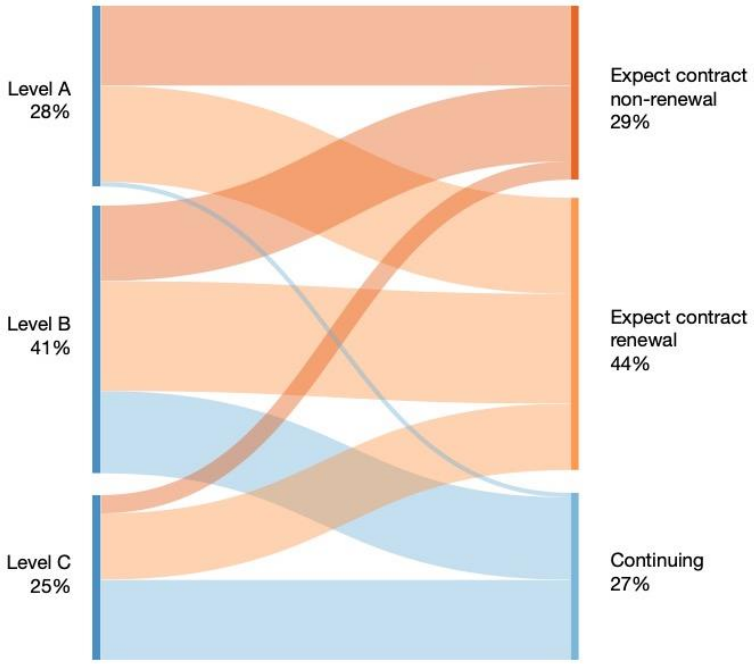
Figure 3.
Percentage of Overtime Worked by Gender



Note. $N = 280$. Valid response to the question "How many hours of overtime do you work in a typical week?" provided by males ($n = 78$) and females ($n = 202$).

About half of the sample (50.7%) had less than 12 months remaining on their contracts, of which about a third did not expect to be renewed. About a third (88, 31.4%) of participants were on contracts that were expiring in less than 6 months, and an additional 54 (19.3%) had less than 12 months remaining. Only 26.8% were on contracts with more than 24 months left, or continuing contracts.

Figure 4.
Alluvial Plot of Academic Level in Relation to Participants Expectation of Contract Renewal



Note. Of 284 participants, 28% (79/284) were Level A, 41% (117/284) were Level B, 25% (72/284) were Level C, and approximately 29% (77/266) did not expect contract renewal, compared to 44% (116/266) expecting renewal and 27% (73/266) on continuing contracts, shown in relation to academic level.

3.2.2. Satisfaction with Career Progression and Support

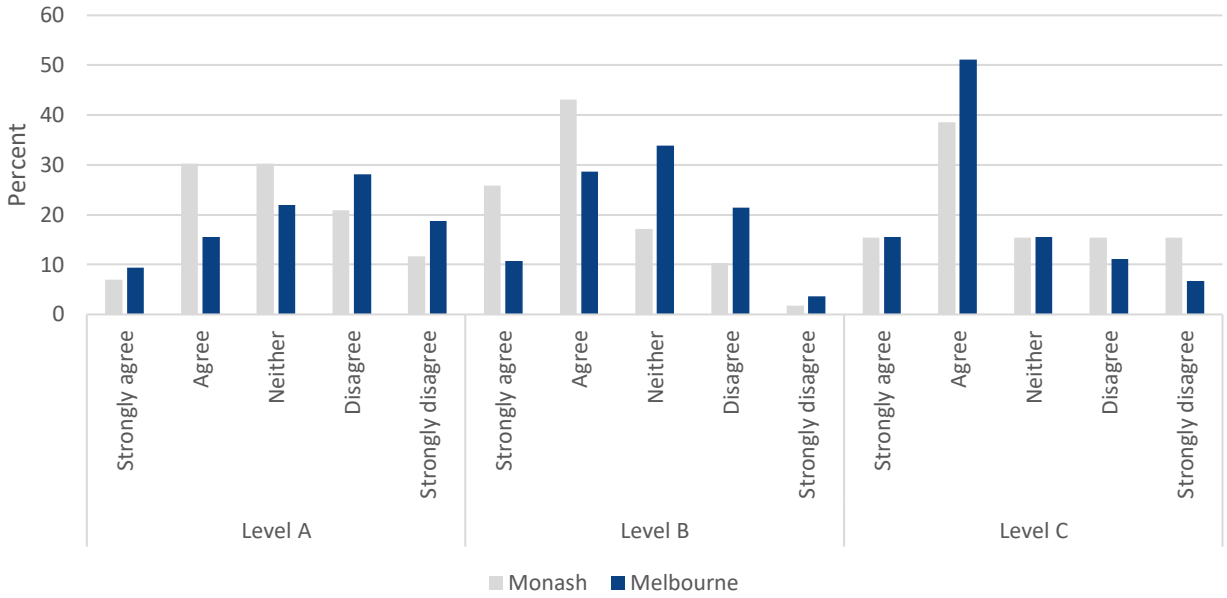
Of the 278 participants that responded to the question "to what extent do you agree that your workplace supports a culture of personal career development?", 44 strongly agreed (15.8%), 99 agreed (35.6%), 64 neither agreed nor disagreed (23.0%), 50 disagreed (18.0%), and 21 strongly disagreed (7.6%).

Of 274 participants 38.0% felt very much, and 24.5% quite a bit supported by their supervisor to progress their career. About a quarter (24.1%) felt a little supported and 12.4% not at all supported by their supervisor (similar across universities).

Most (55.3%) indicated they had a mentor, but an additional 33.7% did not and would like mentoring. Most participants felt comfortable approaching colleagues for mentorship (63.3%), professional guidance (55.0%), and peer-review (61.5%). However, only 37.8% felt able to undertake professional development activities relevant to their career aspirations.

Figure 5.

Percentage of Level A, B, and C Participants' Responses to the Question "To What Extent Do You Agree That Your Workplace Supports a Culture of Personal Career Development?"



Note. $N = 256$. The number of Monash participants (grey bars) working at levels A, B and C were 43, 57, 26, respectively. The number of Melbourne participants (blue bars) working at levels A, B and C were 30, 55, 45, respectively.

3.2.3. Improving Workplace Culture

Most participants were very (13.5% of 281) or somewhat satisfied (47.0%) with their workplace culture, while 26.7% were somewhat or very dissatisfied, and the remainder (12.8%) were neutral.

Of the 274 participants that responded to the question "reflecting on the past two to three years, do you think that the workplace culture has improved?", 53 reported that it had improved (19.3%), 107 reported that it had stayed the same (39.1%), 74 reported that it had become worse (27.0%), 33 did not know (12.0%), and 7 participants indicated that the question was not applicable (2.6%).

Participants reported that workplace culture had improved through good leadership that had reduced competition between colleagues, increased belonging, and recognised achievements.

"I think the team leadership has a big role to play to encourage situations where everyone is a winner - and not put us up against one another!"

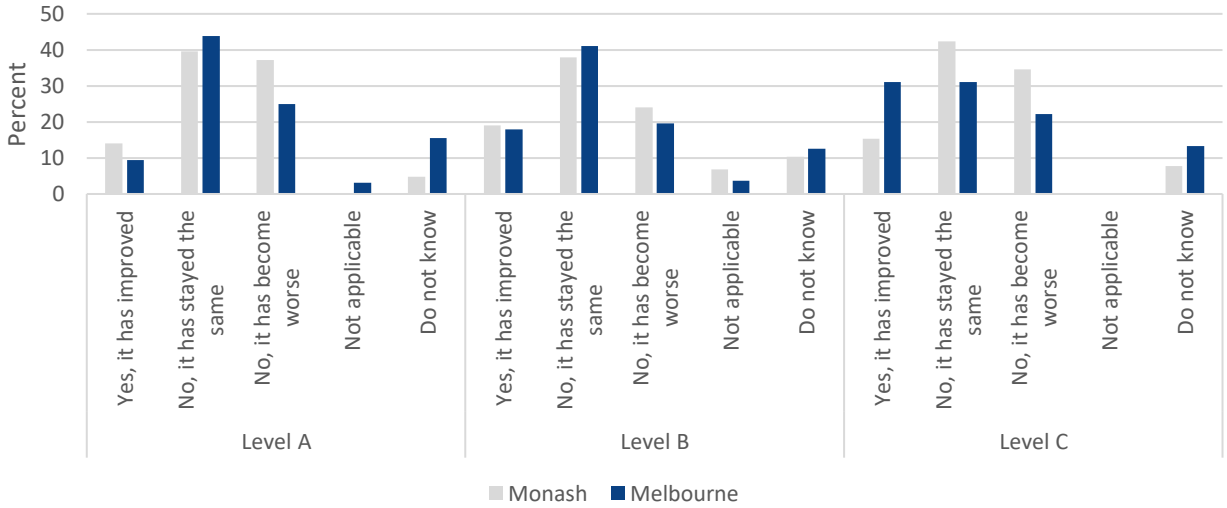
Poor workplace culture was referred to as being due to power imbalances with examples provided of "*people with stronger power taking credit for accomplishment*" and "*using and abusing junior researchers as 'pairs of hands'"*. Some participants said they felt that there were no incentives for senior academics to support EMCRs as it was not regarded as an important part of their own performance measures or outcomes. There was also a sentiment that there were increased disparities for those with carer responsibilities and teaching roles in terms of academic success and progression. Poor managers and leaders were those who had "*unrealistic expectations*" were "*manipulative and controlling*" and would not "*genuinely look out for your career interests*".

A key driver of poor workplace culture was identified as the research funding environment where "*we are all competing against each other for the same awards and there is not enough money to support all our jobs".* Terms like "*competition*" and "*scarcity*" were evident in responses across the survey. For those reporting poor workplace culture, there was a sentiment that they "*were not valued by the institution"* and that staying in academia was not sustainable.

"Little funding means having to rely on doing low hanging fruit stuff for other people and there is no way you can sustain a career from that."

Figure 6.

Percentage of Responses to the Question "Reflecting on The Past Two to Three Years, Do You Think That the Workplace Culture Has Improved?" for Each Level



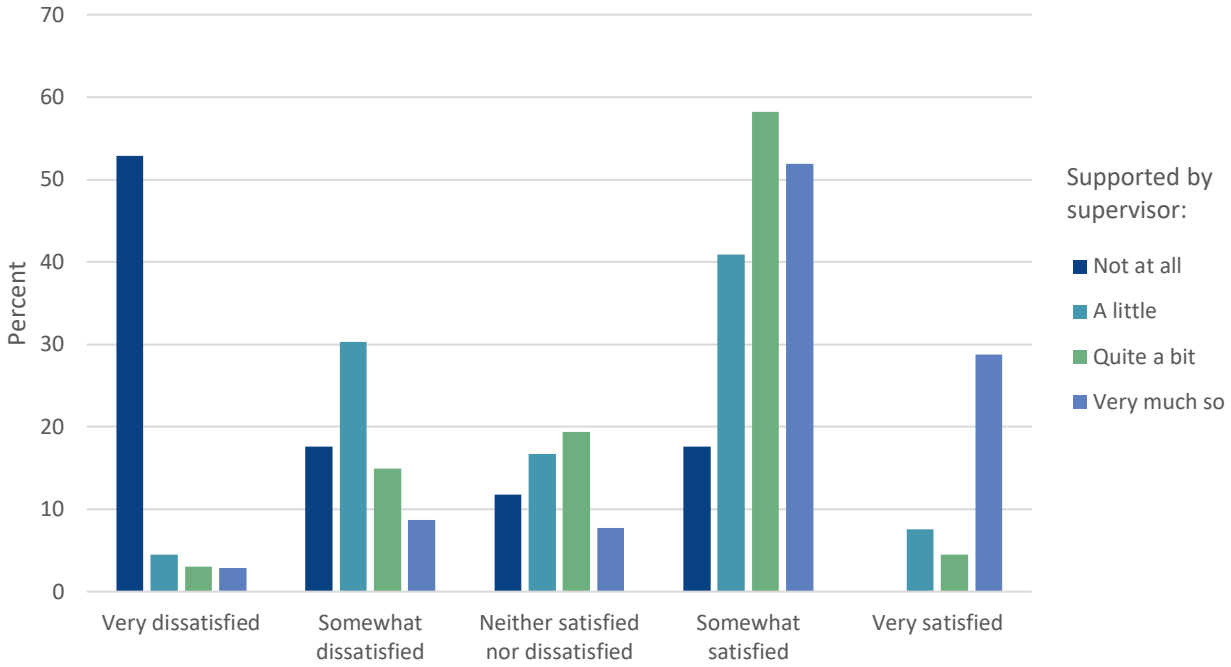
Note. $N = 252$. The number of Monash participants (grey bars) working at levels A, B and C were 41, 57 and 26, respectively. The number of Melbourne participants (blue bars) working at levels A, B and C were 31, 53 and 44, respectively.

Reported satisfaction with workplace culture was correlated with reported level of supervisory support, $r = .50$. In addition, there was a weaker correlation between reported satisfaction with workplace culture and renewal expectations, $r = .28$. Participants who expected to have their contracts renewed tended to report higher satisfaction with their workplace culture. There was also a weak

association between time left on one's current contract and satisfaction with workplace culture, r = .15. Participants who had more time on their current contract tended to report higher satisfaction with their workplace culture.

Figure 7.

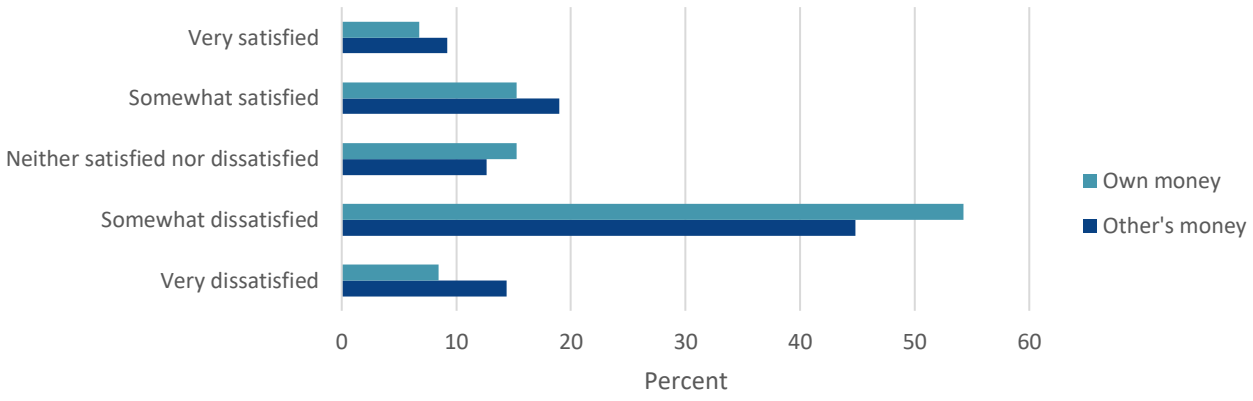
Percentage of Responses to the Question "How Satisfied Are You with Your Workplace Culture?" Shown for Each Response to the Question "Do You Currently Feel Supported to Progress Your Career by Your Supervisor?"



Note. N = 271. Responses to the question "how satisfied are you with your workplace culture?" are shown on the X-axis, and responses to the question "do you currently feel supported […] by your supervisor?" are clustered on the X-axis (refer to legend for response options).

Figure 8.

Percentage of Responses to the Question "How Satisfied Are You with Your Workplace Culture? for Participant's Reliant on Own or Other's Funds

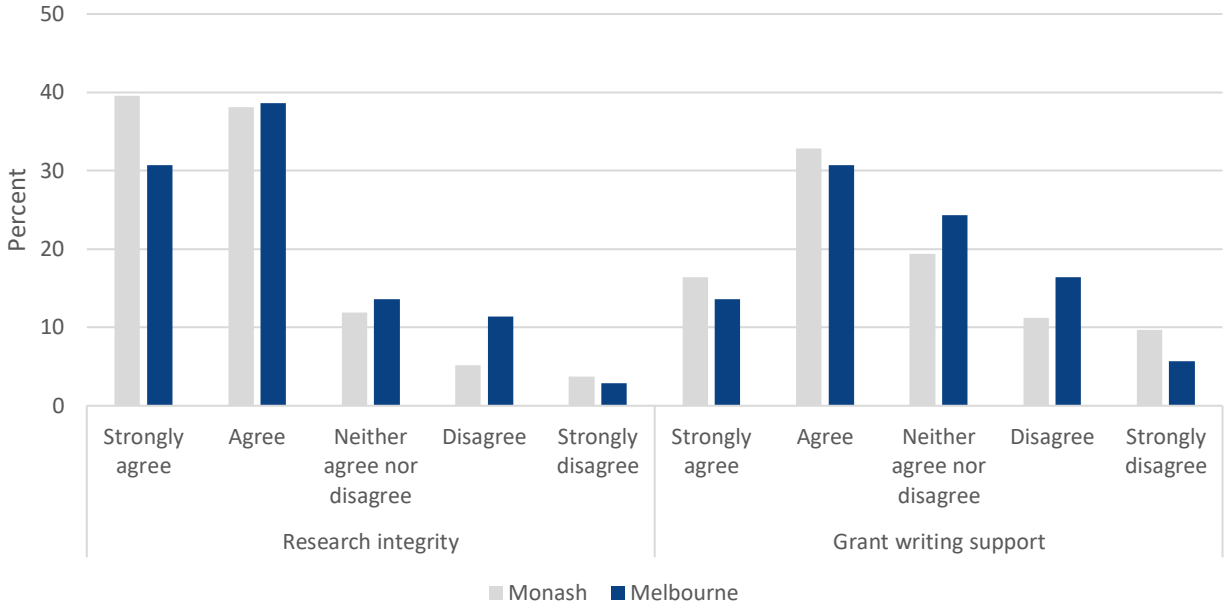


Note. N = 233. Valid cases included participants who reported being either a direct employee of the university or being employed on someone else's grant, only (other's money group; n = 174); and participants who reported having their own grant, only (own money group; n = 59).

3.2.4. Research Integrity and Workplace Support

Figure 9.

Percentage of Responses to Question "To What Extent Do You Agree That Your Workplace Supports a Culture of Research Integrity?" And the Statement "I Have Adequate Support During the Grant Application Process" for Each Institutional Affiliation

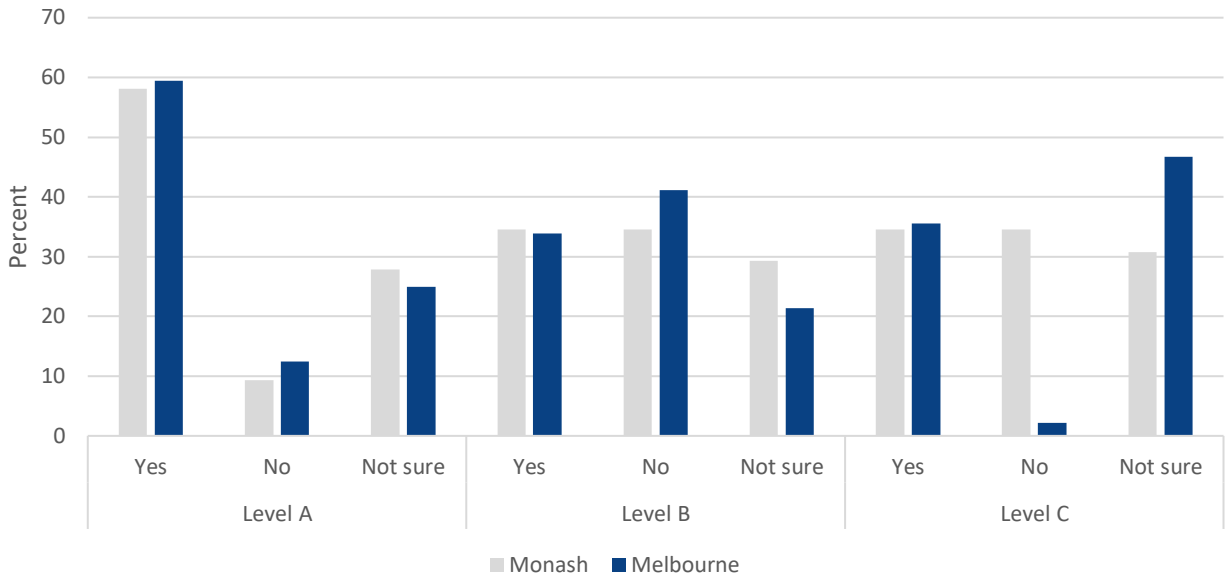


Note. N = 269. Participants to both questions were affiliated with Monash (n = 133) and Melbourne (n = 136). Participants who responded with "N/A" (not applicable) to the research integrity question (Monash, n =1) or the grant writing support question (Monash, n = 13, Melbourne, n = 9) were omitted from the visualisation.

3.2.5. Leaving Academia

Overall, 42.2% of 277 participants indicated they were thinking of leaving academia, 24.9% were unsure, and 32.9% were not considering leaving. Of those who responded yes or unsure, 35.7% were actively looking or applying for jobs outside academia. The top four reasons for wanting to leave were job insecurity (n = 150), lack of funds (n = 124), unmanageable workloads (n = 89) and lack of career progression (n = 86).

Figure 10.
Percentage of Responses to the Question "Are you Thinking of Leaving Academia?" for Each Level and Institutional Affiliation



Note. $N = 260$. The number of Monash participants working at levels A, B and C were 43, 58 and 26, respectively. The number of Melbourne participants working at levels A, B and C were 32, 56, and 45, respectively.

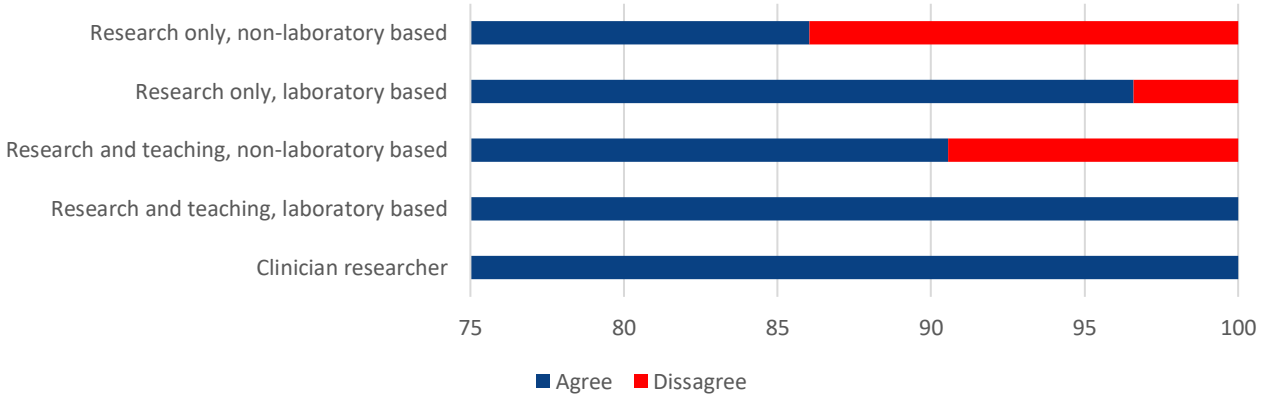
3.3. Job Satisfaction

3.3.1. Effort-Reward Imbalance

Of the 259 who had complete data on this scale, 176 participants (68.0%) scored below 1 (more effort than reward), and 83 participants (32.0%) scored 1 or above.

3.3.2. Job Family and Work Pressure

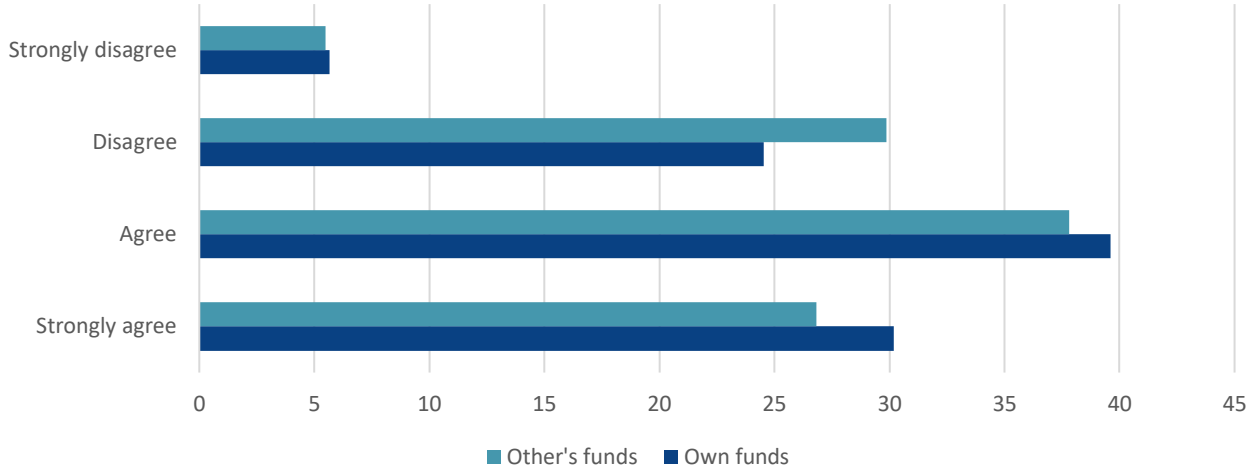
Figure 11.
Percentage of Responses to The Statement "I Have Constant Time Pressure Due to a Heavy Workload" For Each Research Family



Note. $N = 252$. Participants to this question comprised researchers belonging to the following researcher types: research only (non-laboratory based; $n = 86$), research only (laboratory based; $n = 88$), research and teaching (non-laboratory based; $n = 53$), research and teaching (laboratory based; n

= 9), and clinician researcher (*n* = 16). In total, 92.06% expressed agreement with the statement, whereas 7.94% disagreed.

Figure 12.
Percentage of Responses to The Statement "I Am Often Pressured to Work Overtime" For Participant's Reliant on Own or Other's Funds



Note. *N* = 217. Valid cases included participants who reported being either a direct employee of the university or being employed on someone else's grant, only (other's funds; *n* = 164); and participants who reported having their own grant, only (own funds; *n* = 53). In total, 65.90% of participants expressed agreement with the statement, whereas 34.10% disagreed.

Participants were asked to identify practices or initiatives that promote a positive research culture. The most popular initiative was mentoring for career advice, to assist with navigating the academic system and to actively support career progression:

> "Supervisors and mentors who are willing to support career progression through offering funding, nominating for awards, inviting onto grant applications"

Networking, collaboration, and socialising initiatives, both formal and informal, was the next most common response from participants. These initiatives created "*collegiate relationships*" leading to people "*feeling united and as part of the team"* and that the focus was "*on people not just outputs".*

> "Most critical decisions/ideas/collaborations happened in the coffee room. A culture where everyone in a department sit down and chat freely over a cup of coffee or tea is important to foster a positive research culture."

Weekly team catch ups, opportunities to celebrate success and journal clubs were activities that were appreciated by participants to promote teamwork and research discussions. Practical support and resources for research activities was also identified as important by participants. This included assistance with grant writing and access to resources such as examples of successful grants.

Table 2.

Percentage of Responses Regarding the Extent to Which One is Aware of Workplace Support for Each Employment Level and University

			Type of Support								
University		*n*	Ethics application guidance	Grant writing workshops	Research office support	Grant management support	Internal fellowship schemes	Internal travel grants	Promotion information sessions	Supervision information sessions	EMCR leadership course
Monash	*Level A*	38									
	Aware, helpful		50.0%	73.7%	65.8%	50.0%	36.8%	36.8%	57.9%	50.0%	44.7%
	Aware, unhelpful		21.1%	21.1%	34.2%	23.7%	18.4%	18.4%	21.1%	21.1%	23.7%
	Unaware, helpful		21.1%	5.3%	0.0%	26.3%	44.7%	44.7%	15.8%	26.3%	31.6%
	Unaware, unhelpful		7.9%	0.0%	0.0%	0.0%	0.0%	0.0%	5.3%	2.60%	0.0%
	Level B	52									
	Aware, helpful		66.0%	74.0%	74.0%	66.0%	46.0%	60.0%	60.0%	62.0%	30.0%
	Aware, unhelpful		16.0%	20.0%	16.0%	12.0%	10.0%	10.0%	24.0%	16.0%	24.0%
	Unaware, helpful		18.0%	6.0%	10.0%	22.0%	44.0%	30.0%	16.0%	22.0%	42.0%
	Unaware, unhelpful		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	4.0%
	Level C	25									
	Aware, helpful		50.0%	75.0%	66.7%	45.8%	33.3%	54.2%	66.7%	54.2%	25.0%
	Aware, unhelpful		16.7%	16.7%	29.2%	25.0%	20.8%	20.8%	16.7%	20.8%	20.8%
	Unaware, helpful		25.0%	8.3%	4.2%	29.2%	41.7%	25.0%	12.5%	20.8%	54.2%
	Unaware, unhelpful		8.3%	0.0%	0.0%	0.0%	4.2%	0.0%	4.2%	4.2%	0.0%
Melbourne	*Level A*	27									
	Aware, helpful		29.6%	37.0%	44.4%	29.6%	29.6%	40.7%	14.8%	37.0%	29.6%
	Aware, unhelpful		14.8%	22.2%	25.9%	11.1%	33.3%	7.4%	11.1%	14.8%	7.4%
	Unaware, helpful		51.9%	40.7%	29.6%	59.3%	37.0%	48.1%	70.4%	44.4%	63.0%
	Unaware, unhelpful		3.7%	0.0%	0.0%	0.0%	0.0%	3.7%	3.7%	3.7%	0.0%
	Level B	51									
	Aware, helpful		47.1%	68.6%	62.7%	45.1%	66.7%	70.6%	39.2%	45.1%	39.2%
	Aware, unhelpful		13.7%	15.7%	23.5%	9.8%	3.9%	0.0%	9.8%	9.8%	5.9%
	Unaware, helpful		35.3%	9.8%	11.8%	43.1%	25.5%	23.5%	49.0%	41.2%	52.9%
	Unaware, unhelpful		3.9%	5.9%	2.0%	2.0%	3.9%	5.9%	2.0%	3.9%	2.0%
	Level C	41									
	Aware, helpful		65.0%	65.0%	72.5%	55.0%	70.0%	65.0%	85.0%	55.0%	50.0%
	Aware, unhelpful		15.0%	20.0%	22.5%	25.0%	12.5%	12.5%	7.5%	20.0%	12.5%
	Unaware, helpful		20.0%	15.0%	5.0%	20.0%	17.5%	20.0%	7.5%	25.0%	37.5%
	Unaware, unhelpful		0.0%	0.0%	0.0%	0.0%	0.0%	2.5%	0.0%	0.0%	0.0%

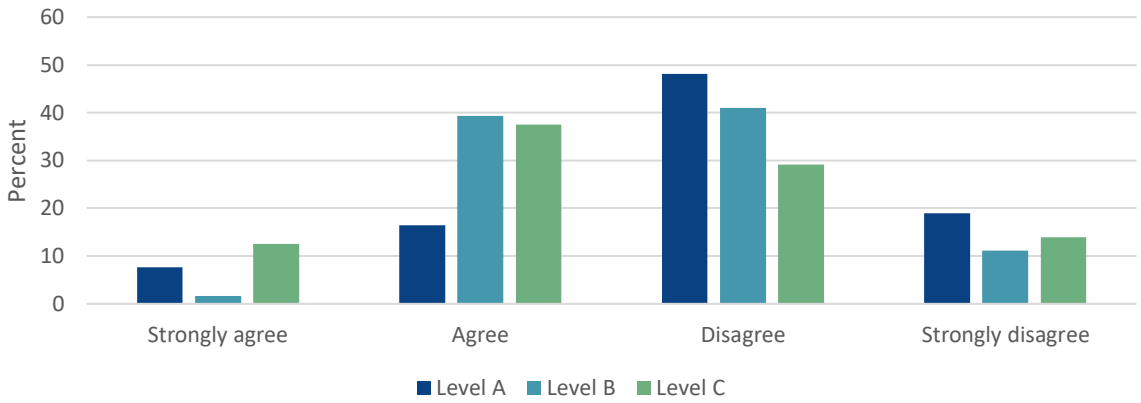
Note. $N =$ 230. EMCR = early and mid-career researcher. Participants indicated whether they were aware that a type of support was provided by their institution, and whether they thought such support was—or would be—helpful.

Table 2 shows which initiatives were helpful across staff levels, per institution, and which initiatives staff were either not aware of, or were not available to them, which would be considered helpful, e.g., internal grant schemes, EMCR leadership courses, promotion information sessions, and grant management support.

3.3.3. Job Promotion Prospects

Of the 260 participants that responded to the question "to what extent do you agree with the following? Considering all my efforts and achievements, I receive the respect and prestige I deserve at work", 31 strongly agreed (11.9%), 139 agreed (53.5%), 71 disagreed (27.3%), and 19 strongly disagreed (7.3%). Responses to job promotion prospects are below.

Figure 13.
Percentage of Responses to The Statement "Considering All My Efforts and Achievements, My Job Promotion Prospects Are Adequate" For Each Level



Note. N = 248. The total number of valid responses to this question were made by participants comprising levels A (n = 72), B (n = 109), and C (n = 67).

3.4. Academic Misconduct

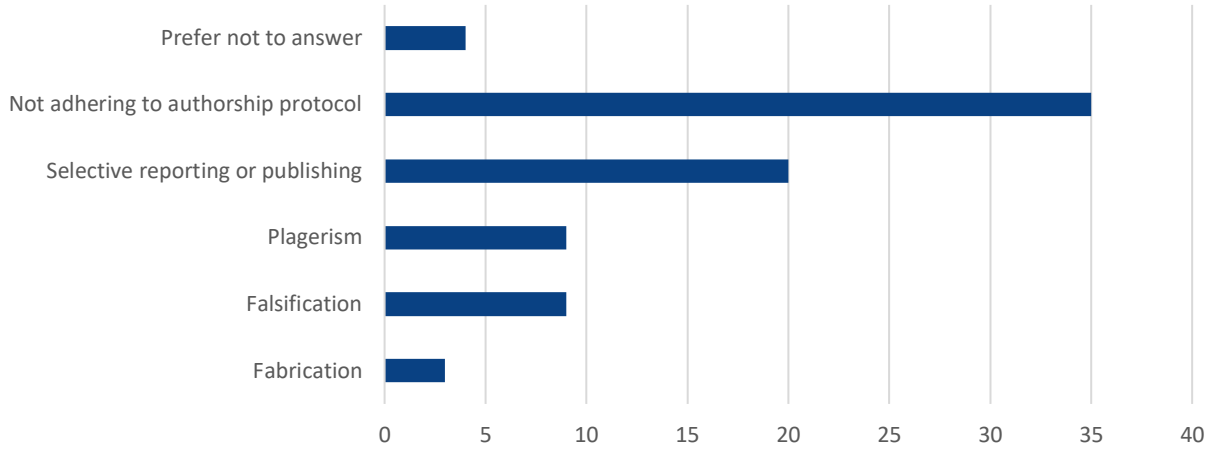
Of the 273 participants that responded to the question "in the past three years, have you observed or had other direct evidence of researchers in your department engaging in any research misconduct?", 204 reported that they had not (74.7%), 50 reported that they had, and that it disturbed them (18.3%), 2 reported that they had, and that it did not bother them (0.7%), and 17 preferred not to answer (6.2%).

One of the main types of academic misconduct was not adhering to authorship guidelines. Participants described "*Supervisors putting name on research when not contributing much or anything"* and including the names of other researchers on grants and publications *to "garner favours".* It was stated that *"absolutely nothing can be done about authorship due to the power imbalance between junior and senior academics".*

Misconduct was recognised to occur in a high-pressure system that is with unrealistic expectations.

> "As long as the system at large rewards unbounded publication (quantity over quality), there will be people within that system who will push all boundaries to game that system and this includes research misconduct to achieve their aims"

Figure 14.
Frequency (n) of Reported Research Misconduct Across All Participants



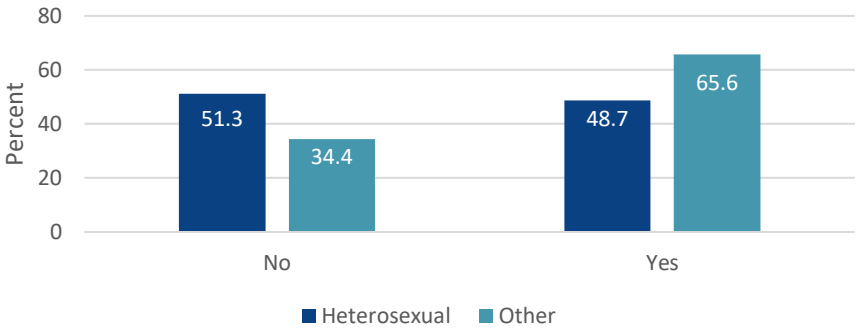
Note. Of 284 participants, 18.4% (*n* = 52) reported witnessing academic misconduct. This figure shows the details of the type of misconduct participants reported having witnessed. Participants were able to select more than one response option.

3.5. Sexual Harassment

Participants were asked to report whether anyone associated with work had conducted behaviours that could be interpreted as sexism during the previous 12 months, using the Sexual Experience Questionnaire, which groups experiences in 4 categories. While some of these questions assessed behaviours directed at the participants, other items assessed whether these had been witnessed. Out of 253 participants, 126 had experienced sexist hostility (49.8%), 59 had experienced sexual hostility (23.3%), 12 had experienced unwanted sexual attention (4.7%), 4 participants reported sexual coercion (1.6%). An additional question identified that 6 (2.4%) indicated they had experienced sexual harassment at work at least once during the past 12 months. Of note, much of this time was spent under lockdown restrictions and working from home orders.

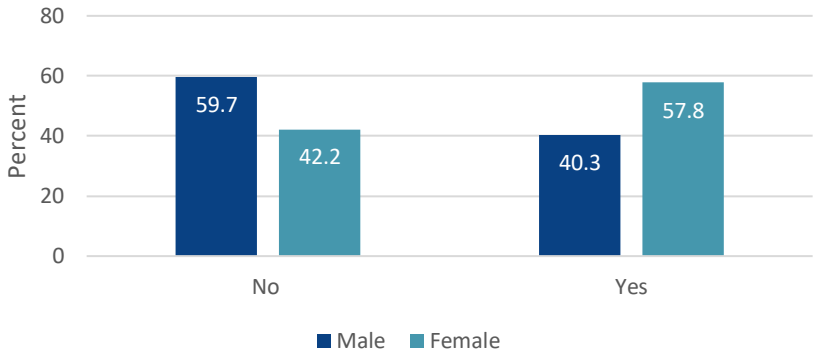
Of the 253 participants who responded to the item: “Have you witnessed sexual harassment or assault happen to someone else at your current workplace?”, 188 (74.3%) said no, 34 (13.4%) said yes, and the remaining 12.2% said unsure or prefer not to say. The 34 participants who indicated they had witnessed or experienced any incidence of sexual harassment were asked whether ‘the incident that had affected them most’ was reported to management. 14 participants indicated that someone else had reported the incident, 5 had reported it themselves, 11 indicated it had not been reported and 3 were unsure. As can be seen in Figure 15 and 16, women, and participants who identified as gay, lesbian, bisexual or other more frequently experienced sexual harassment.

Figure 15.
Percentage of Reported Sexual Harassment by Sexual Orientation



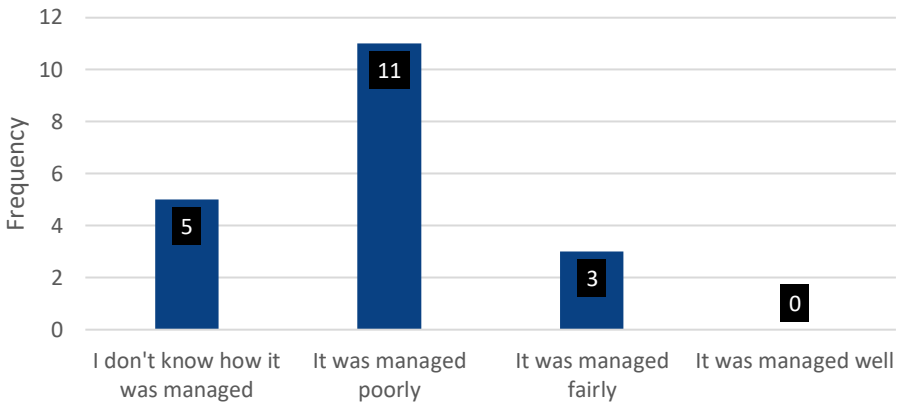
Note. *N* = 229.Yes denotes group who reported any sexist hositility, sexual hostility, attention, coercion, or harassment, and those who had witnessed sexual harassment in last 12 months (*n* = 117), by sexual orientation (heterosexual *n* = 197, lesbian, gay, bisexual, other *n* =32). Participants with missing data on either question were excluded from this graph.

Figure 16.
Percentage of Reported Sexism or Sexual Harassment by Gender



Note. *N* = 252. Yes denotes participants who reported any sexist hositility, sexual hostility, attention, coercion, or harassment, and those who had witnessed sexual harassment in last 12 months (*n* = 133), by gender (male *n* = 72, female *n* = 180). Participants with missing data on either question were excluded from this graph.

Figure 17.
Reported Sexual Misconduct Incidents Per Responses to the Question "How Satisfied Are You with How the Incident Was Managed?"

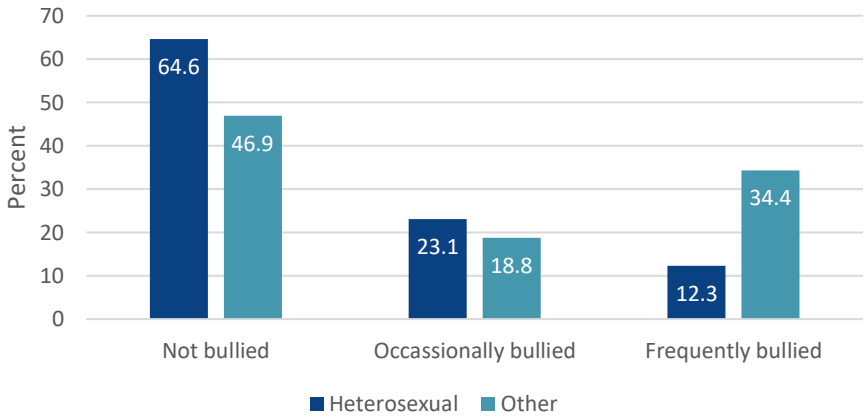


Note. N = 19. This figure indicates the level of satisfaction with the management of the incident for both those who reported the incident themselves (n = 5), and those in which another person reported the incident (n = 14). No one indicated it was managed well.

3.6. Bullying and Racism

Of the 251 participants who completed the 9-item Short Negative Acts questionnaire, 73 participants (29.1%) experienced occasional bullying, and an additional 44 participants (17.5%) experienced frequent bullying (in total, n =117, 46.6%)[19]. The most frequently reported negative acts included 'being ignored or excluded', and 'someone withholding information which affects your performance'. Participants who identified as gay, lesbian, bisexual or other more frequently experienced bullying (Figure 18).

Figure 18.
Percentage of Staff Who Report Bullying Experiences by Sexual Orientation

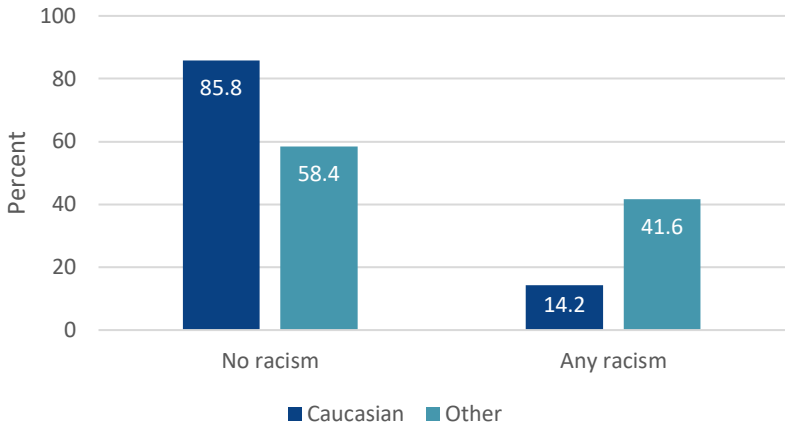


Note. N = 277. Categories derived from the Short Negatives Acts Questionnaire (not bullied n = 141, occassionally bullied n = 51, frequently bullied n = 35), by sexual orientation (heterosexual n = 195, Lesbian, Gay, Bisexual, Other n = 32). Participants with missing data on either question were excluded from this graph.

Using the Ethnic Harassment Experiences tool, 57 participants (22.5%) had experienced one or more instances of racism in the past 12 months (Table 3). Items assessing experiences of racism asked

participants whether, during the past 12 months, anyone "associated with your work (e.g., supervisors, co-workers, subordinates, students, collaborators at other companies) [had] done any of the following behaviours?" Participants who were non-Caucasian were much more likely to experience ethnic harassment than Caucasian participants (Figure 19).

Figure 19.
Percentage of Staff Who Report Experiencing Racism by Ethnicity



Note. N = 253. Any (n = 57) versus no (n = 196) experiences of ethnic harassment by racial background (caucasian n = 176, other n = 77). Participants with missing data on either question were excluded from this graph.

Table 3.
Overall Prevalence of Reported Racist Behaviour for the Entire Sample

	Behaviours					
	Derogatory comments about your ethnicity	Used ethnic slurs to describe you	Made racist comments	Failed to give you information […]	Told jokes […]	Excluded you from social interactions […]
Never	90.5%	92.9%	90.1%	98%	88.1%	96%
Rarely	5.9%	5.5%	7.9%	1.6%	8.3%	2%
Sometimes	2.8%	1.6%	1.2%	0.4%	2.8%	1.6%
Often	0%	0%	0.8%	0%	0%	0%
Very often	0.8%	0%	0%	0%	0.8%	0.4%

N = 253. Only complete responses included in percentages. The entire behaviour described for the fourth, fifth and sixth behaviour were as follows: "Failed to give you information you need to do your job because of your ethnicity", "Told jokes about your ethnic group", and "Excluded you from social interactions during or after work because of your ethnicity".

In this domain, we drew comparisons with a 2021 report on a large cohort of early career researchers across Australia,[12] and drew interpretations that our cohort witnessed higher instances of racism, but considerably less questionable research practices.

"Non-white students and staff still feel like outsiders and are not supported enough. There is a lack of understanding of other cultures."

Participants identified that bullying led to poor work culture. The elements of bullying that influenced the work culture included a lack of consequences for bullying, observations, and experiences of being bullied particularly in stemming from power imbalances from senior staff.

"There has been no visible justice for staff and students that have been bullied, harassed, or unfairly treated."

Participants proposed that training sessions and seminars could create an antibullying culture and were noticing University-led efforts in this area.

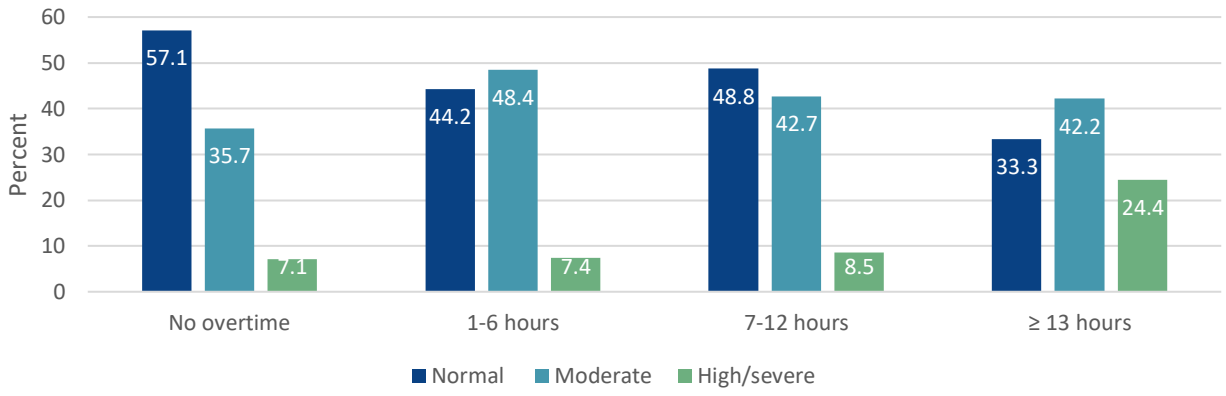
"The MDHS Faculty has initiated an early career researcher leadership program… This promoted many aspects of a positive research culture, including conflict resolution… I could not recommend this initiative enough."

3.7. Mental Health

3.7.1. Work-related Burnout

We employed the Copenhagen Work-related Burnout Inventory, which defines work-related burnout as: *"The degree of physical and psychological fatigue and exhaustion that is perceived by the person as related to his/her work"*. Of the 250 participants who completed the scale, over half reported work-related burnout (54.8%). Specifically, 110 (44.0%) were considered having moderate burnout, and an additional 27 participants (10.8%) scored as having high/severe burnout. The average score was 51.7, which was higher than any of the 15 employment groups in the original paper[33].

Figure 20.
Percentage of Overtime Worked by Burnout Level



Note. N = 250. Using the work-related *Copenhagen Burnout Inventory*, which categorises participants into no burnout (n = 113), moderate burnout (n = 110) and high or severe burnout (n = 27) categories.

3.7.2. Depression, Anxiety and Stress

Across the overall sample, 28.0% scored as having clinically significant symptoms of depression and 21.7% as having clinically significant symptoms of anxiety, using validated tools. Rates of clinically significant symptoms of depression, anxiety, and suicidal ideation were comparable to that seen in the Australian adult population during the COVID pandemic[33]. Therefore, conclusions regarding the rates of mental health problems as compared to the general population in usual circumstances, cannot be made. Furthermore, although there are no cut offs, stress levels were moderately above the average for the population, based on a large English population study (about 0.37 standard deviations higher in our EMCRs than the English population)[31]. Results are in Table 4.

Table 4.

Frequencies of Likely Major Depressive Disorder and Generalized Anxiety Disorder and Mean Stress Scores.

Variable	EMCRs	Australian Adults [a]
Depression [b], *N (%)*		
No or mild symptoms	180 (72.0%)	72.4%
Clinically significant symptoms	70 (28.0%)	27.6%
Thoughts of being better off dead or of self-harm [c]		
Not at all	216 (86.4%)	85.4%
At least several days per week	34 (13.6%)	14.6%
Anxiety [d], *N (%)*		
No or mild symptoms	195 (78.3%)	79.0%
Clinically significant symptoms	54 (21.7%)	21.0%
Stress, *M (SD)*	7.28 (2.86)	–

Note. [a] Drawn from a sample of 13,829 Australian adults conducted from 3 April to 2 May 2020[33]; [b] Clinically significant depression defined as a PHQ-9 score ≥ 10; [c] Variable based on PHQ-9 item ("thoughts that you would be better off dead or of hurting yourself in some way"); [d] Clinically significant anxiety defined as a GAD-7 score ≥ 10. An under-review paper from our group shows no significant change in prevalence of depression and anxiety symptoms in adults in Victoria, Australia from April 2020 to September 2020, suggesting that the comparison of Australian adult prevalence estimates shown here are likely still applicable to our sample collected at the end of 2020.

Mental health differed by academic level, with over one-third of academics at or below Level A having clinically significant depression symptoms compared to just under a quarter in those at or above Level B (Figure 21), with even more pronounced differences for clinically significant anxiety symptoms (Figure 21) and for suicidal ideation (20.6% vs 10.9% for ≤ Level A vs ≥ B, respectively). Stress levels also were higher in those at or below Level A compared to at or above Level B (*mean value* = 8.35 vs *mean value* = 6.86, Cohen's *d* = 0.53).

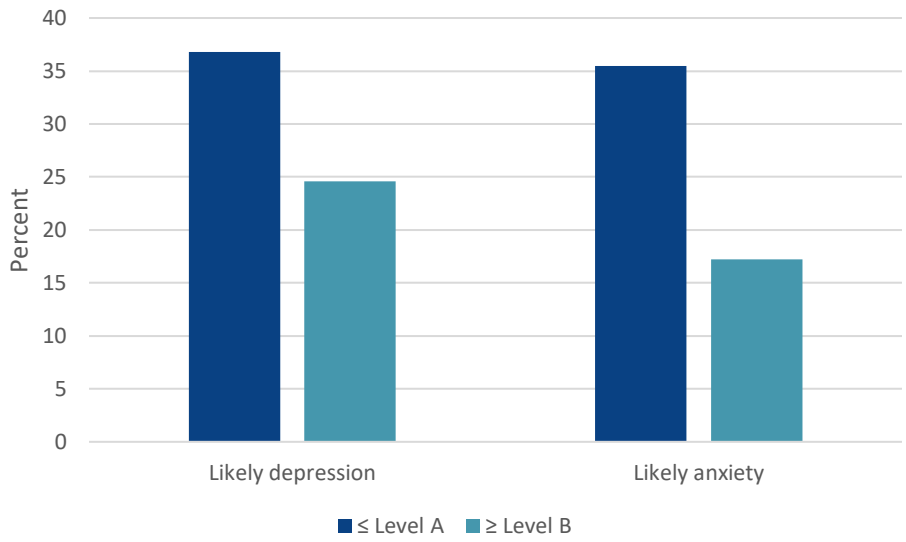
Working > 12 hours of overtime weekly (compared to 0 to 12 hours of overtime) was associated with significantly higher rates of clinically significant depression symptoms (44.4% vs 24.5%), suicidal ideation (28.9% vs 10.3%), clinically significant anxiety symptoms (35.6% vs 18.7%), and stress (*M* = 8.47 vs *M* = 7.02, Cohen's *d* = 0.51). However, this did not explain the level differences, rather, Level A and high (> 12 hours) weekly overtime work appeared to be associated with stress,

depression, suicidal ideation, and anxiety. Notably, in EMCRs working >12 hours of overtime weekly, their rates of clinically significant depression or anxiety symptoms and suicidal ideation greatly exceeds the Australian adult rates.

We explored whether EMCRs expected their contract to be renewed or not or were on a continuing contract as well as the age groups of EMCRs. Neither of these factors explained why Level A EMCRs have elevated rates of clinically significant depression or anxiety symptoms. However, EMCRs who did not expect their contract to renew had significantly higher stress levels compared to those who expected their contract renewed or were on continuing contracts (*mean value* = 8.19 vs *mean value* = 6.94, Cohen's *d* = 0.45). The direction was the same for clinically significant depression and anxiety symptoms and suicidal ideation. The prevalence was higher in those not expecting their contract renewed than those for who were expecting contract renewal. Rates of clinically significant depression and anxiety symptoms and stress levels did not differ between women and men, university or carer status.

Similar measures of mental health focusing on graduate students have shown comparable levels of depression, anxiety and suicidality to academics at Level A in this cohort[33] . This is indicative of mental health issues manifesting early in the academic career track, taking into account a selection bias of graduates that meet a high level of academic functioning.

Figure 21.
Percentage of Clinically Significant Depression and Anxiety Symptoms by Level

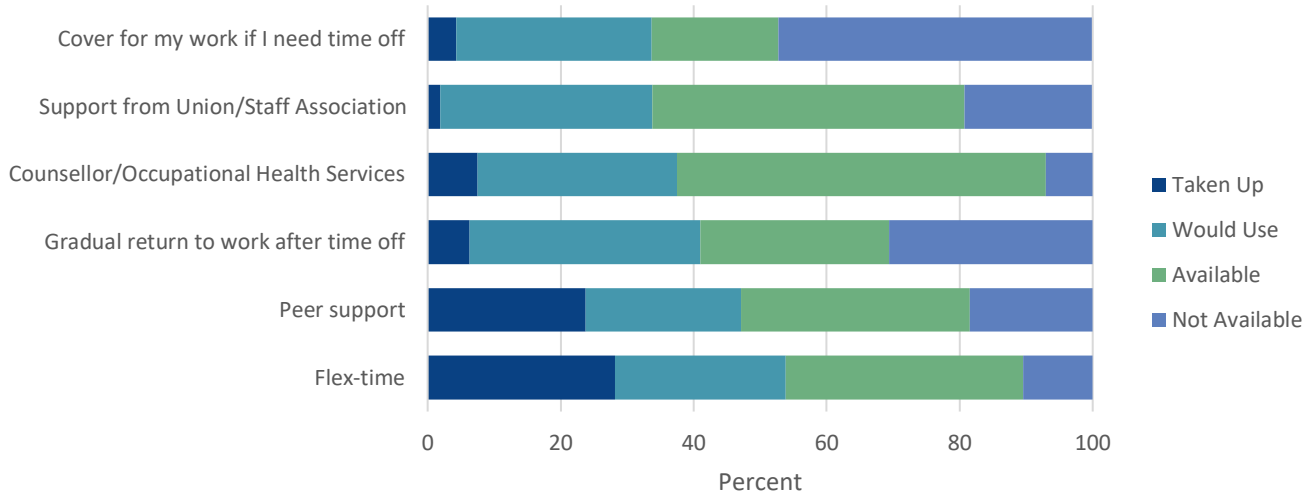


Note. *N* = 349. For Level A's, *n* = 68 completed depression and anxiety symptoms measures. For ≥ Level B's, *n* = 175 completed the depression and *n* = 174 completed the anxiety symptoms measure. Graph shows the percentage of valid participants by level who scored ≥ 10 on the PHQ-9 indicating clinically significant depression symptoms and ≥ 10 on the GAD-7 indicating clinically significant anxiety symptoms.

In terms of supports, EMCR's used flexible time and peer support the most, with about 1 in 4 using these supports. About 1 in 3 said they "would use" gradual return to work after time off, cover for work if time off needed, counsellor services and support from union/staff association, if available. Nearly 1 in 2 reported, however, that no cover for work if time off needed was available and 1 in 3 reported that gradual return to work after time off was not available. Despite the widespread availability of counsellor/occupational health services with just 7% saying it was not available, only

7.5% of people reported using these services and similarly, just about 2% reported using support from a union/staff association, despite only 19% saying it was not available.

Figure 22.
Figure Showing the Percentage of Participants Utilisation of Various Workplace Supports



Note. Valid responses ranged from 213 to 238 across items.

Participants described support for their mental health issues from colleagues and supervisors.

> "Those of my colleagues whom I chose to confide in have been very supportive and I felt no judgement from them."

> "My boss has been mostly supportive, asking if certain things would be 'too stressful' if she were to change something, so this is helpful"

Participants did not feel that mental health issues had impacted their employment prospects but there were some participants who limited telling people.

3.8. COVID-19 Impact

Across a variety of research activities, 22% - 44% of EMCRs rated COVID-19 as having an impact "to a great extent" (Table 5). The most impacted categories were being unable to conduct experiments (44.2% rated "to a great extent") and being unable to conduct data collection (36.5% rated "to a great extent"). Even the relatively less impacted domains were still endorsed by at least 1 in 5 EMCRs (e.g., ability to prepare grant applications comprised rated as "to a great extent" by 21.6%).

Table 5.
Impact of COVID-19 on Research Activities

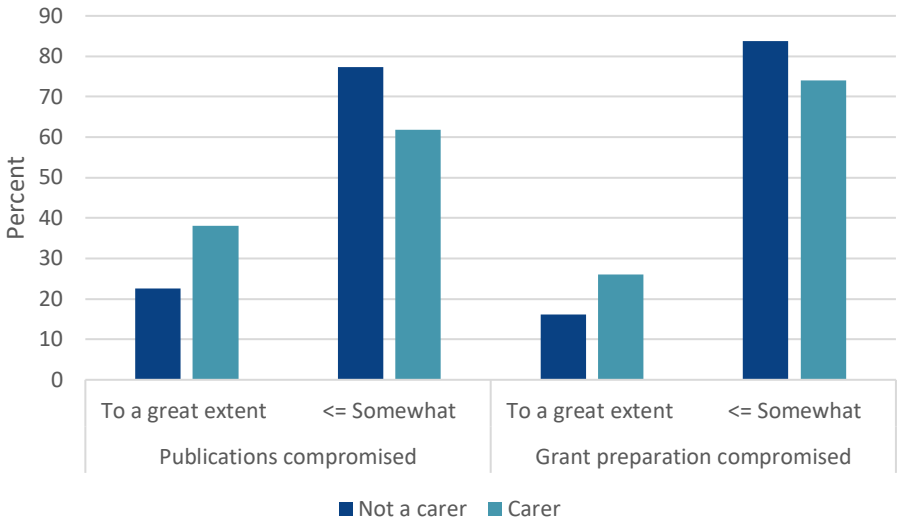
Variable	*N* (%)
Hours Increased	
To a great extent	70 (29.9)
≤ Somewhat	164 (70.1)
Publications Compromised	
To a great extent	73 (30.4)
≤ Somewhat	167 (69.6)
Unable to Conduct Experiments	
To a great extent	65 (44.2)
≤ Somewhat	82 (55.8)
Unable to Collect Data	
To a great extent	73 (36.5)
≤ Somewhat	127 (63.5)
Grants Compromised	
To a great extent	45 (21.6)
≤ Somewhat	163 (78.4)

Note. Verbatim items are "The number of hours I work each day has increased", "My ability to prepare publications has been compromised", "I have been unable to conduct experiments", "I have been unable to conduct data collection", and "My ability to prepare grant applications has been compromised". Each question was rated "Not at all", "Very little", "Somewhat", or "To a great extent".

EMCRs who were also caregivers reported greater impact from COVID-19 (Figure 19). Specifically, compared to non-caregivers, caregivers endorsed that their publications were compromised by COVID-19 to a great extent more often, and the ability to prepare grants being compromised to a great extent more often.

Reports of COVID-19 impacting research to a great extent did not differ by university or staff level. COVID-19 resulted in being unable to conduct experiments to a great extent by women: 32.4%, and men: 26.1%; with no other research domains differing by gender.

Figure 23.
Percentage of Responses to COVID-related Items Organised According to Carer Status



Note. Figure shows percentage of responses to items "My ability to prepare publications has been compromised" (*N* = 233), and "My ability to prepare grant applications has been compromised" (*N* = 203). Each question was rated "Not at all", "Very little", "Somewhat", or "To a great extent". 118 carers and 115 non carers responded to the publications question. 104 carers and 99 non-carers responded to the grants question.

3.9. Solutions

179 survey participants provided between 1-3 solutions and suggestions to improve their workplace experience using free text responses. Themes and subthemes are comprehensively summarised in Supplementary Material, with example quotes and an indication of how often the topic was referenced. Major themes identified in the data included Career planning; People and culture; Workload and performance management.

Under ***Career planning***, the topic of job security was most commonly mentioned by participants and identified as a major area for improvement. Interventions at University, Faculty and supervisor level included promoting the provision of longer contracts (beyond 12 months) where possible, providing more safety net salary funding schemes, as well as more (or more visible) collaborative advocacy for increased research funding at a national level. Better provision of career advice and mentoring, in particular promotion pathways and promoting a diverse range of career paths within and outside academia, was commonly mentioned as a need. Provision of more small grant funding opportunities, support with writing of grants and strategically deciding which grant to apply for (rather than for all), and other capacity building opportunities to support the development of an independent career through enhanced funding success were also commonly suggested.

The theme ***People and culture*** captured solutions offered regarding increasing opportunities for (peer) mentoring and sponsoring, and increasing network and collaboration opportunities including with peers, but also with senior staff through social events, presentations, and collaborative grant opportunities. Increasing wellbeing support was suggested through promoting mental health days, role-modelling of healthy work-life balance from senior staff, and more professional mental health support opportunities. Improving workplace culture through ensuring regular 360 feedback opportunities for senior staff, more leadership training opportunities, better managing of poorly performing supervisors, and a more adequate and transparent process of reporting and handling

workplace issues were commonly suggested. Providing more rewards (awards) for well-performing supervisors and mentors, as well as including positive workplace behaviours in promotion processes was also suggested. Identifying instances of where proper mentorship is not being provided by supervisors and offering personalised alternatives to mentorships opportunities was recommended as a method to mitigate the negative effects of inadequate supervision. In general, participants suggested more should be done to improve inclusion and diversity, through strategic planning of inclusiveness in grant applications, pathways to promotion for minority groups, and taking action on Athena SWAN initiatives. EMCRs also expressed a desire to feel better represented on Faculty committees and other decision-making bodies, to achieve a more collaborative leadership style.

Workload and performance management included suggestions to address high and unsustainable workloads. Solutions offered included regular and more strategic workload planning, registering unpaid overtime to allow time-in lieu to be taken, or paid overtime. Participants wanted more input and control over their role and workload, and clearer and more realistic expectations about performance and timelines. Suggestions were made by many to promote flexi-time, more administrative support, support for parents with young children (affordable childcare), ensuring meetings and seminars are recorded for later viewing, and to actively discourage managers expectations or requests for EMCRs to work unpredictable or regular overtime. Participants wanted more support for taking annual leave (planning for assistance with workload, backfill), normalising taking weekends off work, and promoting days in lieu when expected to work overtime (e.g., entire weekends). Finally, adequate renumeration for externally funded staff for teaching and supervision tasks, and consideration of previous work experience were also suggested.

4. Conclusion and Recommendations

Urgent action is needed to attract and retain excellent EMCRs, and to foster a workplace of choice for emerging researchers. Based on the key recommendations, an action plan should be developed to address unsustainable workloads, inadequate supervision, job insecurity, unacceptable workplace behaviours such as bullying, harassment, racism and sexism, and the high prevalence of burnout, and symptoms of depression and anxiety in EMCRs, more so in some specific sub-groups. These issues are impacting the work-related quality of life of our workforce, as well as their productivity. Subgroups of the EMCR community are disproportionately affected by these issues, including junior EMCRs, women, and those with caring responsibilities. A 'survival of the fittest' culture is likely impacting the diversity of the academic workforce, hindering highly qualified and talented individuals from progressing and reaching their full potential.

The results of this survey should be interpreted considering its limitations. Of note, few participants in our sample identified as having a disability (less than 4%), preventing us from quantifying their experiences. The survey data was collected during November-January 2020/2021, during which time there were some COVID-19 restrictions in place in Victoria. It is possible that those EMCRs with the highest workloads or caregiving responsibilities, or those with more severe mental distress did not participate in the survey. Therefore, our data may underrepresent some groups, or underestimate the occurrence or severity of issues such as sexual harassment. Given the cross-sectional nature of the survey, causality or temporality should not be inferred (and was not the aim of the project).

4.1. Recommendations for Action

This report comes at a time where post-COVID-19 workplace modifications represent a unique opportunity for reshaping the academic workforce experience. Action is needed to promote wellbeing and thriving of individuals and ensure diversity in the workforce. Interventions and policies to address the issues identified in this survey should be co-designed and developed collaboratively between Faculty staff and a diverse group of EMCRs. These interventions need to be tested and evaluated to ensure they will have the desired impact and not further disadvantage any group of EMCRs. These interventions may take into account existing frameworks that have been developed in this area, including the evidence-based "Thrive at work framework" developed to mitigate illness, prevent harm, and promote thriving; and other frameworks[34]. Thought should be given as to who is responsible for the interventions, and how to measure success over time.

> "Involving ECRs in research strategy and vision. Currently, it is very heavy on only Professors being involved."

4.2. Key Recommendations

Below are key recommendations that are put forward by the research team but require consultation with the wider EMCR community before developing an action plan. The recommendations are categorised at the level of the University, School/Department, and team.

1. **Create a new Faculty position focussed on driving EMCR initiatives**
   1.1. Embed bi-annual follow-up of the survey, with possible variations including qualitative focus groups and interviews, and ensure adequate representation from minority groups.

2. **Reduce insecure employment and minimise administrative burden**
   2.1. Encourage and incentivise **maximum permittable job security** through:
      2.1.1. Reducing administrative and process barriers to **providing longer-term contracts** (e.g., recruitment process and redundancy pay).
      2.1.2. Providing better information and support to supervisors for managing the contract **probation period**.
      2.1.3. Actively support long-term and **continuing contracts** to decrease the proportion of early- and mid-career researchers in insecure employment.
   2.2. **Increase the notice period** from 4 to 12 weeks and offer support to staff who are losing employment (e.g., **sponsoring and networking**).
   2.3. Ensure supervisors **support long-term career plans** for junior staff and promote participation in personal development opportunities.
   2.4. Provide more **opportunities for diverse career pathways** within and outside academia, and manage career expectations.
   2.5. Increase the **visible advocacy** by university leaders for more national funding for research and teaching, and longer grant funding periods.
   2.6. Increase **mentoring culture,** incentives, and expectations, particularly for those who are not receiving sufficient support from their supervisors.
   2.7. Provide mentoring schemes that are accessible throughout the year and for all staff levels.

3. **Manage workloads and projects more efficiently**
   3.1. Promote **project management skills** and tools, including regular workload planning, priority setting, tracking overtime, short- and long-term goal setting, and leave planning.
   3.2. **Reduce bureaucracy** and improve administrative support for EMCRs.
   3.3. Allow **taking time in lieu** (consider 1.5x for weekend hours)**.**
   3.4. Create visible role-modelling from senior staff on healthy work-life balance.

4. **Promote diversity and inclusion**
   4.1. Improve **representation of EMCRs** on decision-making bodies, allowing for greater transparency and communication about decision making.
   4.2. Provide **transparency and communications** about budget decisions and how they impact on subgroups of staff (e.g., caregivers, casual staff).
   4.3. Assess **representation of staff diversity** in teaching and leadership positions (including gender, race, LGBTIQ+, disability status) and work towards adequate representation of diversity in our students and communities.
   4.4. Implement best-practice **initiatives to increase diversity and inclusion**, and publish annual reports and metrics on progress.

4.5. Faculty and University to work together with Go8 and funding bodies to develop **targets to improve diversity**.

5. **<u>Promote positive workplace behaviours and reduce negative workplace behaviours</u>**

5.1. Improve the management of reports of negative workplace behaviours, based on best practice (learn from partner institutes) through:

5.1.1. Providing **better support** for staff and students reporting negative workplace behaviour.

5.1.2. Promote reporting incidents through a **variety of options**, including anonymously, via a support person, external agency, or online drop box.

5.1.3. Developing **new workplace culture training** to be more engaging and effective than the annual online modules.

5.1.4. **Transparent reporting** on the recording and management of incidents to improve confidence in reporting and organisational justice.

5.1.5. Developing transparent **auditing processes** that can be applied when academic misconduct is suspected or reported.

5.2. Ensure people with known issues are not promoted to **leadership positions** until they have demonstrated adequate change in behaviours and capabilities.

5.3. Promotion framework, probation, and hiring/renewal process should include **evidence of values and positive workplace behaviours**, including mentoring.

5.4. Consider implementing confidential **exit interviews and 360 reviews** (e.g., The Imperial College Expectations 360 tool) to performance and promotion frameworks.

5.5. Ensure staff at risk (off-campus, junior, sole supervisor, on a work visa) are adequately **protected through co-supervision and mentoring**

5.6. **Improve networking and collaboration opportunities** to break through silos and hierarchy.

5.7. **Promote reproducible research** at all staff levels, including pre-registration, record keeping. Develop and publish metrics on these practices.

5.8. Introducing **regular measures of staff satisfaction**, which are included as key performance indicators for leaders (metrics of success should go beyond funding and publications).

5.9. Work together with the Go8 and funding bodies to develop a transparent **reporting framework of workplace culture**, alongside the usual academic metrics.

These recommendations are largely in line with the Russell Group report which developed practical ideas and suggestions to strengthen the working culture and environment for researchers in the United Kingdom. Other resources that may be relevant are cited here[32,35–39].

4.3. Recommendations for Further Enquiry

From the data that were collected in this survey, opportunities exist to report and publish on validated tools that were included in the survey, such as the Effort Reward Balance, Sexual Experiences Scale, Work-Related Burn Out Scale, and the short Negative Acts Questionnaire and make comparisons between subgroups, and to the literature of these validated scales.

We recommend repeating the survey every 1 to 2 years to monitor workplace culture, career development and wellbeing from the perspective of EMCRs. In addition, this would enable the evaluation of actions taken are to improve outcomes. Additional questions to consider in future surveys include:

- Motivations to continue working in academia.
- Sources of workplace pressure (supervisor versus competitive academic environment).
- Types of work done when working overtime.
- Opportunity to provide open text responses to describe experiences of racism, bullying.
- Understanding the experiences of, and barriers to, reporting of bullying, racism and academic misconduct.
- Working from home and flexible working arrangements.
- Productivity measure: How do you think you are tracking, where do you place yourself among peers or key performance indicators?
- Absenteeism and presentism.

Follow-up qualitative studies to further examine the issues raised and to identify solutions and interventions are recommended. This may include focus groups, particularly with groups that may have been underrepresented in the survey (e.g., culturally and linguistically diverse people, people with disabilities, LGBTIQA+).

This study represents a key step in generating quantifiable evidence that can form the basis for longitudinal measures of success of interventions aimed at improving workplace culture and well-being of EMCRs. Future enquiries should address the source of workload pressures (e.g., supervisor versus competitive nature of academia), and aim to include higher EMCR participation, and more EMCRs from diverse backgrounds and minority groups. Better data collection and transparent reporting on an organisational level regarding contract length, staff turnover and reported workplace issues may identify specific areas or organisational units that require support or improvement. Further qualitative data may also elicit further in-depth information about key issues and solutions in priority groups.

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The views presented are held by the majority responsible researchers and steering committee members and are not necessarily reflective of the University of Melbourne or Monash University Faculty more broadly.'

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