

# Understanding wellbeing challenges for university students during crisis disruption

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# Abbreviations

ABS	Australian Bureau of Statistics
AIHW	Australian Institute of Health and Welfare
ADII	Australian Digital Inclusion Index
ATN	Australian Technology Network
AUMHF	Australian University Mental Health Framework
CFA	Confirmatory Factor Analysis
COVID-19	Coronavirus disease of 2019
DESE	Department of Education, Skills and Employment
DET	Department of Education and Training
DVC	Deputy Vice Chancellor
EFTSL	Equivalent Full-Time Student Load
Go8	Group of Eight
HDR	Higher Degree by Research
HEPPP	Higher Education Participation and Partnerships Program
IEO	Index of education and occupation
IRU	Innovative Research Universities
K10	Kessler Psychological Distress Scale
MLR	Maximum Likelihood Parameter Estimates (Robust)
NCSEHE	National Centre for Student Equity in Higher Education
PASS	Peer Assisted Study Sessions
PPCT	Process-Person-Context-Time
PhD	Doctor of Philosophy
RUN	Regional Universities Network
SEIFA	Socioeconomic Indexes For Areas
SEM	Structural Equation Modelling
SES	Socioeconomic Status
SEHS-HE	Social Emotional Health Survey-Higher Education
TEQSA	Tertiary Education Quality and Standards Agency
VAGO	Victorian Auditor-General's Office
VC	Vice Chancellor
WHO	World Health Organisation

## Executive Summary

For students studying at university, maintaining optimum mental health and wellbeing is imperative to participate and engage in all aspects of learning, including but not limited to lectures, tutorials, laboratories, workshops, assessments, and practicums. Because of the repercussions from the disruptions of 2020, Australian university students have been under immense pressure as they adapted to considerably different study conditions.

Prevented from being on campus and switching to online study mode differed from their previous experiences and expectations of university study. The findings from this study confirm that a significant proportion of university students – two out of three in our study – experienced high to very high levels of psychological distress.

This study contributes to a needed research arena focused on university student mental health and wellbeing. Drawing on data from more than 1,400 students across Australia and leveraging both quantitative and qualitative reports, these study findings reflect the diversity of students who carry with them a variety of strengths from their lived experience through the disruptions of 2020.

By recognising the challenges students faced (and continue to face) and the realisation of the connection between student success and mental health, many universities made significant commitments to improving students' mental health. However, as perceived by students in our study, some did not. Students' levels of psychological distress were higher for universities with lower levels of support. Conversely, students had lower levels of psychological distress if they felt their university provided a sense of belonging and connectedness in addition to being authentic and consistent with their governance.

We recognise that universities across Australia have a wealth of knowledge on how to prioritise mental health and wellbeing and have responded with many changes in a number of spheres to meet student needs. During the crisis disruptions of 2020, there have been increased mental health resources and support packages offered to students in universities. Yet, we still see long waiting lists for mental health services, including within university counselling services, which can only serve a small percentage of need.

Therefore, we advocate for universities to gain accurate data on prevalence rates of psychological distress across their student population and accurately map the structures and processes across their university community that support student mental health and wellbeing. This study provides a national snapshot of the prevalence rates of psychological distress and mapping of structures and processes available in universities that impact student wellbeing, albeit on a small scale.

### The key findings were:

1. The prevalence of psychological distress among university students across Australia in 2020 was high (32%) to very high (39%). Pre-COVID studies found that 17 per cent of university students reported "high to very high" levels of distress. This suggests that the combined (high to very high) prevalence in this study, at 71 per cent, is over four times that seen in pre-COVID studies; despite this, the higher levels are commensurate with other global research examining the prevalence of psychological distress in 2020
2. Students identifying as belonging to an equity-based group were vulnerable to high levels of psychological distress (students from low socioeconomic backgrounds, rural and regional students, international students, students who identify as having a disability), as well as students who identified as first-in-family. These groups of students experienced high levels of psychological distress, which were, on average, not different to the general population of students, except for students identifying with a

disability who experienced very high levels of psychological distress compared to the general population of university students.

3. Students who experienced high levels of institutional support and collective support from within their university experienced lower levels of psychological distress.
4. Access to technology resources was vital for continued, stress-free study for students. The lack of technological devices such as a laptop and fast, affordable internet made completing online study during lockdowns almost impossible, especially for students in regional and remote areas with limited internet access and for students sharing devices with others.

The increased levels of psychological distress for current and future university students will remain long after the economy recovers, the borders reopen, and we learn to live with the COVID-19 virus. Additionally, for those students experiencing the bushfires of 2020, the effects still linger due to communities' physical devastation, negatively impacting students' wellbeing.

The release of the Australian University Mental Health Framework (AUMHF) coincided with the immense challenges of 2020 and has brought mental health to the forefront of national concern and university governance. As recommended in the AUMHF, this report collects data on the prevalence of psychological distress for university students and maps the university processes and structures that support student mental health and wellbeing.

## Recommendations

Based on the findings from this research and to suggest practical strategies, it is recommended that:

1. To understand the prevalence of mental health across the university student population, we advocate for universities across Australia to use a population screening tool to implement a data collection method (e.g., add the K10 to student evaluation surveys). The university will then be able to identify, broadly and at the diverse group level, areas of positive mental health and areas of emerging mental health risk.
2. To understand the efficacy of the collective support culture, additional questions tapping into a sense of belonging and connectedness can be added to the student evaluation surveys to ascertain how students feel about their university collective support culture.
3. To understand the efficacy of the proximal processes and structures directly accessible to the student in their day-to-day activities and of the distal processes and systems that influence policy and procedures, the university can use the conceptual model (Figure 30) to map and assess the effectiveness of their institutional support culture for student mental health.
4. Equitable access to technology and the internet is paramount to reduce stress for students who do not have their own device, including when their internet service is limited or not affordable. Therefore, the university needs to consider setting up a device (laptop) loan system to support student access to technology. As campuses continue to conduct their teaching online and when campus resources (computers and eduroam) are unavailable for student use.

## Practical Applications

If university systems and processes put the students' wellbeing at the heart of their learning, then their learning will thrive. If their well-being is depleted, students will not be able to successfully engage with their learning. The first practical action for higher educational institutions moving forward should be related to knowing the extent of the problem.

Therefore, measuring the prevalence of psychological distress followed by mapping the breadth and depth and the integrity of the university's support culture will assist in planning for optimal student wellbeing.

With such high rates of psychological distress in the university student population, exacerbated by the disruptions of 2020, the findings of this research emphasise the importance of universities monitoring students' wellbeing within a whole-of university approach to mental health and wellbeing. Upscaling this research in each university and monitoring the data output over time will go a long way towards accurately measuring the mental health and wellbeing of university students across Australia. Universities can then monitor their prevention strategies relating to institutional and collective support with the student at the centre and resources readily available in the students' environment to foster positive mental health development.

# Introduction

Public health experts, governments, and communities widely acknowledge the importance of protecting against poor mental health (also referred to as mental ill-health or mental illness). Notably, because of the potential loss of healthy years of life, reduced economic productivity and capacity, and how seriously individuals' lives are affected, including those who provide support, discussions on mental health care are paramount (Australian Government Productivity Commission, 2020). Even before 2020, mental ill-health was the second-highest cause of disability across all age groups, with more than 42.6 per cent of young people (15–19 years of age) feeling stressed most, to all the time (Australian Institute of Health and Welfare [AIHW], 2020; Tiller et al., 2020). Since 2020, bushfires and the COVID-19 pandemic have brought mental health to the forefront of national concern. The importance of characterising where Australian young people are positioned on the continuum of mental health and understanding the prevalence of poor mental health within subgroups within our community has never been greater. Such information can assist policymakers, national and local governments, and communities in determining the best ways to collectively manage and maintain mental wellbeing.

## Defining mental health, wellbeing and psychological distress

Mental health can be referred to as the full continuum of experiences ranging from positive to negative mental health (Hughes & Spanner, 2019). Positive mental health or wellbeing refers to a state of emotional contentment in which an individual is capable of experiencing enduring positive feelings, thoughts, and behaviours while simultaneously processing and responding to negative emotions or situations appropriately (Hughes & Spanner, 2019). Wellbeing, therefore, is a complex combination of an individuals' emotional, physical, social and cognitive health factors, whereby optimum wellbeing is characterised by an individual having the ability to flourish within these factors (Hughes & Spanner, 2019), placing them on the positive end of the mental health continuum. While positive mental health and wellbeing are often referred to synonymously, it is important to note that the absence of mental illness symptoms alone is insufficient to determine positive mental health and wellbeing and comprises only one aspect of the continuum to describe mental health (Agteren & Iasiello, 2020). Furthermore, comparative negative experiences on the mental health continuum also need to be considered. Negative experiences range from psychological distress to diagnosable mental illness, including depression and anxiety (Hughes & Spanner, 2019). The position on the continuum of mental health can be determined through assessment at the individual level or screening at the population level (Andrews & Slade, 2001; Sunderland et al., 2011).

## Population screening

The Kessler Psychological Distress Scale (K10; Kessler et al., 2002; Sunderland et al., 2011) is a ten-item measure, screening for non-specific psychological distress in the form of anxiety, depressed mood, worthlessness, fatigue and/or motor agitation (Brooks et al., 2006). While the K10 is not an individual diagnostic tool, it can distinguish the likelihood of community cases versus non-cases for certain mental health disorders, as per the diagnostic criteria outlined in the Diagnostic and Statistical Manual of Mental Health 5<sup>th</sup> Edition [DSM-5] (American Psychiatric Association, 2013). This, in addition to the K10's brevity and strong psychometric properties, makes it a popular choice for general-purpose health surveys in both smaller communities and larger nationwide surveys (Brooks et al., 2006; Kessler et al., 2002). The K10 has previously been used in annual government health surveys conducted in the United States, Canada, Australia, and the WHO World Mental Health Surveys (Kessler et al., 2002). Within Australia, the Australian Bureau of Statistics (ABS) uses the K10 to form part of their national household survey on the prevalence of mental health disorders (Andrews & Slade, 2001; Brooks et al., 2006). This screening tool allows for groups to be

placed on a continuum from experiencing little to no psychological distress (i.e., experiencing wellbeing), to moderate levels, as well as determining high to very high levels of psychological distress (ABS, 2007; Sunderland et al., 2011). Pre-Covid studies using the K10 have found university students have higher levels of moderate distress (27%) than non-students (21%), with the levels of high to very high distress being found in around 17 per cent of university students (Cvetkovski et al., 2012). Notwithstanding the importance of individual diagnosis of mental health disorders, indeed, the disruptions and constraints of 2020 have meant that population-level screening is required to identify the degree of psychological distress in subgroups within a population to target interventions for those with the highest need of assistance.

# Background

## Disruptions of 2020

Australians experienced two significant disruptions in 2020. Firstly, Australia's centre and east coast were subject to ongoing (over 19 weeks) bushfires, with 19 million hectares burnt, 3000 homes destroyed, and 33 people killed (Filkov et al., 2020). Secondly, the rapid onset of a pandemic related to the novel coronavirus (COVID-19) resulted in a widespread lockdown of societies across the globe (Jensen, 2020). This global pandemic caused physical health deterioration, being classified as an acute respiratory disease, transmitted through saliva droplets and virus particles released into the air (World Health Organisation, 2020). The symptoms vary from mild illness to severe disease and death (Department of Health, 2021). Initially identified in Wuhan City, China in December 2019, COVID-19 rapidly spread around the world and was declared a pandemic in March 2020 by the World Health Organisation (WHO, 2020). As of September 2021, Australia has had over 77,000 infections with over 1100 deaths; globally, the number of people infected has risen exponentially to over 225.4 million confirmed cases, with 4.7 million deaths due to COVID-19 (John Hopkins University, September 2021). Although both bushfires and COVID-19 result in declines in physical health and sometimes death, the way we respond to these disruptions may also result in emerging social problems, including those that impact our mental health.

Both the COVID-19 pandemic and bushfires have exacerbated the mental health crises through 2020 into 2021 (Arjmand et al., 2021; Dodd et al., 2021; Pierce et al., 2020). In relation to the pandemic, people from around the world have been required to deal with unique challenges, including; unprecedented government health measures that limit personal freedoms; loss of income due to business closures during the lockdown; resource shortages in the retail and health sector; uncertain prognoses for illnesses, conflicting messages from governments and health advisors, (primarily related to vaccine efficacy); social isolation from family, friends, work or study colleagues; a diminished outlook for job success in specific sectors; mask-wearing interfering with communication (especially for those with hearing difficulties); and physical closure of education campuses, with moves to online learning or home-schooling (Jensen, 2020; Kyne & Thompson, 2020; Universities Australia, 2020a). Additionally, within Australia, people who experienced disruptions from bushfires have shown increased anxiety levels and decreased wellbeing (Arjmand et al., 2021). Any combination of these factors contributes to poor mental health (Productivity Commission, 2020; WHO, 2020).

## How do universities currently support students' wellbeing?

In recent years there has been considerable Australian and international research into university student wellbeing, which has shown university students are a *very high-risk population* for psychological distress and mental disorders, with both prevalence and severity of poor mental health rising within student populations worldwide (Hughes & Spanner, 2019; Larcombe et al., 2016; Orygen, 2017). As this evidence base grows, it becomes increasingly clear that a significant portion of university students will experience mental health difficulties at some point in their studies, with COVID-19 disruptions exacerbating the situation (Dodd et al., 2021; Marinoni et al., 2020). For students to learn and thrive, universities must strive towards providing a supportive and psychologically safe environments. Indeed, the impact of disruption from COVID-19 to learning in universities has been unequal both across the states of Australia and between equity groups of students (Kyne & Thompson, 2020; Marinoni et al., 2020)

Current studies (Hughes & Spanner, 2019; Orygen, 2017; 2020a 2020b; Tiller et al., 2020; Venesse, 2016) have found that certain student groups are at an increased risk for developing mental illness, including young people (aged up to 25 years), law and medicine students, postgraduate students (e.g., PhD students), and students from equity

backgrounds. This latter group includes international students, rural and regional students, students from lower socioeconomic status (SES) backgrounds, and students who identify with disabilities. Pre-COVID, students with a disability were more likely to be at risk of poor mental health than students not identifying with a disability (Minotti et al., 2021). Additional student groups identified as likely to benefit from differentiated and individualised strategies to support mental health and wellbeing include Aboriginal and Torres Strait Islander students, those who are first in their family to attend university, students who identify as LGBTIQ+ and students with existing mental health conditions (Orygen, 2017).

Following the release of the mental health of Australian university students report by Orygen (2017) and direction from the Okanagan Charter (American College Health Association, 2015) and the United Kingdom University Mental Health Charter (Hughes & Spanner, 2019), the Australian University Mental Health Framework (AUMHF) was developed for use by institutions as well as any individual with a role in supporting tertiary students' mental health and wellbeing (Orygen, 2020a). The Framework provides guidance to foster "mentally healthy university settings that provide the best opportunities for students to thrive educationally and personally" (Orygen, 2020a, p. 6). Key principles within The Framework include encouraging participation within the university setting and fostering an inclusive yet diverse environment to promote connectedness within the university community leading to enhanced academic and personal achievement (Orygen, 2020a). Implementation of recommendations within the AUMHF requires funding and culture transition to support equality of opportunities for all Australian university students to complete their academic courses. Therefore, by adopting strategies to implement The Framework, institutions, to varying degrees, set up support mechanisms for student mental health and wellbeing, including counselling services. Indeed, institutional support via equity funding, including allocations from the Higher Education Participation and Partnerships Program (HEPPP), has previously enabled universities to develop and sustain a wide variety of interventions to support mental health for students from equity groups (Brett et al., 2019). Certainly, transparent, and authentic messaging from the executive and management staff through to lecturers and tutors to collectively address the disruptions and constraints of the COVID-19 pandemic that have negatively affected university students' wellbeing is critical as the flow-on effects continue to impact students' wellbeing and academic progression (Kyne & Thompson, 2020; Marinoni et al., 2020).

Setting up institutional supports to mitigate psychological distress across broad and diverse groups of university students will not be solved by increasing mental health services alone. To complement the existing counselling and study support services offered at most Australian universities, peer support and mentoring programs are increasingly being introduced to collectively support and assist students in managing stress and to make transition adjustments to the university environment (Arslan et al., 2020; Crisp et al., 2020). These collective support mechanisms at the peer level are designed to encourage a sense of connectedness amongst both new and veteran university peers. They are a low-cost way to collectively lift the levels of wellbeing across the year levels<sup>1</sup>.

As well as academic support measures, universities have recognised that an underlying reason that students consider leaving university often include financial stress, which not only impacts academic performance but also contributes to psychological distress (Edwards, & McMillan, 2015; Lim, 2015; Scevak et al., 2015). Indeed, research consistently shows that despite a robust and equitable student loan and fee assistance system in Australia, economic disadvantage and financial strains remain a central concern for many equity students, particularly students from low SES backgrounds (Bexley et al., 2013; Brett et al., 2019; Devlin and McKay, 2017). Certainly, the lockdowns and reduced need for casual jobs

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<sup>1</sup> (For details on academic support programs financed by the Federal Government through HEPPP funding which contribute to collective wellbeing, see the review *Higher Education Participation and Partnerships Program: Seven Years On* [NCSEHE, 2017])

due to the COVID-19 pandemic means that many students from low SES backgrounds have been under significant financial pressure, which impacts negatively on wellbeing and study time as these students continue to search for work (Karimshah et al., 2013; Marinoni et al., 2020; Universities Australia, 2020b). University staff, as well as students from disadvantaged backgrounds, note that to succeed at university, students require financial stability (Devlin & McKay, 2017). For some degree types, additional costs such as computers and technology equipment can be unaffordable for students from low SES backgrounds (King et al., 2015; Scevak et al., 2015). As campuses closed down and courses went online, students who had previously used *free* university computers (in libraries/laboratories) with the *free* university internet were required to source their own devices and pay for their own internet (Marinoni et al., 2020). During lockdowns, many rural and regional students had to return home during the semester. Depending on the degree of isolation, access to technology and reliable internet has been problematic at times (Marinoni et al., 2020).

Further, students from low SES backgrounds studying in regional locations reported that costs of living involved with moving closer to campus and paying rent, and/or paying for fuel or other travel expenses to access campus, add to the overall cost of studying at university (Devlin & McKay, 2017). During 2020, many regional and rural students who had returned home were still maintaining rentals or residential housing so they could return to campus when lockdowns from the pandemic were lifted, as well as experiencing stress as to whether their financial situation would allow them to return to university when the pandemic was over (Marinoni et al., 2020). These extra financial strains impacted disproportionately on students from disadvantaged backgrounds (Universities Australia, 2020b).

## University students and disruptions

Before the disruptions of 2020, students experienced poor wellbeing (Auerbach et al., 2016), which is known to impact academic performance and completion rates with flow-on economic and health costs (Orygen, 2017). In Australia, the university study year of 2020 had just begun when the pandemic lockdown imposed structural change, bringing uncertainty for students with ensuing feelings of frustration, anxiety, and betrayal (Goode et al., 2020; Kyne & Thompson, 2020). The extended isolation from campus and disruption from academic routine meant many students have arguably encountered feelings of loneliness with disconnections from friends and partners and worry about how they would complete their studies (Goode et al., 2020). Additionally, students from equity backgrounds remain at increased risk for mental ill-health, as they are often reticent to seek support (Orygen, 2017; Veness, 2016). Furthermore, these students may have reduced opportunities to access services as well as the social and emotional support they need, both from within and external to their institutions, potentially widening the gap between students from equity backgrounds and those who are not (Orygen, 2020b; Universities Australia, 2020a; Veness, 2016).

When COVID-19 lockdowns occurred, the HEPPP programs, which mainly supported equity students, were no longer accessible on campus. These support services - counselling, study support, peer-to-peer mentoring, and financial services - were normally accessed through face-to-face sessions, and so COVID lockdowns required many services to be suspended. Limiting support, especially face-to-face communication, had the potential to exacerbate students' psychological distress. As well as a lack of face-to-face contact, many students have been required to interrupt their research projects, practica or internships (Grimmer et al., 2020). Certainly, students who expected face-to-face laboratory sessions as part of their study report anxiety as to how they would fulfil their course requirements (Kyne & Thompson, 2020). Face-to-face peer support and counselling sessions also ceased (Morley & Clarke, 2020) or often reduced to online service. With continued uncertainty and disruption for students (e.g., as to when students could complete tasks required for graduation) comes anxiety and fear (Goode et al., 2020).

Current research into disruptions have found that during 2020 indicators of wellbeing declined (Fisher et al., 2020; Liddy et al., 2020); with increased anxiety being significantly associated with the pandemic and higher levels of depression associating with bushfires (Arjmand et al., 2021). Notably, a systematic review on mental health in the general population conducted by Xiong and colleagues (June, 2020) indicates that, out of 648 publications with 19 studies meeting the inclusion criteria, there were relatively high rates of symptoms related to poor mental health including:

*high rates of symptoms of anxiety (6.33% to 50.9%), depression (14.6% to 48.3%), posttraumatic stress disorder (7% to 53.8%), psychological distress (34.43% to 38%), and stress (8.1% to 81.9%) are reported in the general population during the COVID-19 pandemic in China, Spain, Italy, Iran, the US, Turkey, Nepal, and Denmark. Risk factors associated with distress measures include female gender, younger age group ( $\leq 40$  years), presence of chronic/psychiatric illnesses, unemployment, student status, and frequent exposure to social media/news concerning COVID-19. (Xiong et al., 2020, p. 55)*

This review by Xiong and colleagues (2020) indicated that being a student was a risk factor associated with higher distress. Further research into the impact of COVID-19 related to higher education students has found associations between COVID-19 and increased levels of anxiety and psychological distress, and lower levels of wellbeing (Aristovnik et al., 2020; Baloran, 2020; Cao et al., 2020; Dodd et al., 2021; Roy et al., 2020). As well as certain equity groups being disproportionately affected by COVID-19 disruptions (Marinoni et al., 2020), students in certain courses have also been more affected than others (Morley & Clark, 2020), for example, students who were required to attend hands-on laboratories (sciences and health sciences) or attend a student placement in fields of study such as in schools or social work (Kyne & Thompson, 2020).

With widespread, ongoing psychological distress amongst the university population, there is increased risk of developing more severe and longer-lasting mental health episodes (Pierce et al., 2020). Mental health services on university campuses alone cannot cope. Therefore, social support cultures within university institutions need to be developed or maintained, which prevent the widespread development and long-term effects of poor mental health. Currently, in this COVID-19 reactive environment, developing planned interventions or maintaining the current services (cost-cutting) and gathering evidence on program efficacy is challenging. Organisations need to fully understand the prevalence of psychological distress, what approaches are working to support a culture of wellbeing, for whom, and by how much (Oyrgen, 2020a). From this information, organisations can consider and plan for sustainable efforts to counter such growing psychological distress.

Despite university students' documented need for services to support their mental health (Oyrgen, 2017; Veness, 2016), there is concern that services have struggled to meet demand during COVID-19, and such difficulties are likely to continue even once the pandemic has passed (Marinoni et al., 2020). Services were provided, developed, or expanded differently across universities, including a variety of mental health, counselling, academic and financial services, and these services have played a critical role in supporting students' wellbeing during the pandemic (Marinoni et al., 2020). The extent to which services are accessed provides valuable data which informs future funding strategies; however, the financial challenges that universities face (especially with the loss of international students) may constrain these services rather than expand them to meet the future demands from the ongoing COVID disruption (Marinoni et al., 2020; Victorian Auditor-General's Office [VAGO], 2021).

Universities are well placed to develop a social support-based culture, especially as they start to adopt the principles and practices within the AUMHF (Oyrgen, 2020). Notably, in Australia, universities interact with over 1.6 million students, 91 per cent of whom are under the age of 40 (DESE, 2020). In terms of student diversity, in 2019, 67.6 per cent of the

students were domestic with 32.4 per cent international students (DESE, 2020). Of the domestic students, 17.6 per cent were from a low SES background, two per cent were Aboriginal and Torres Strait Islander students and 18.9 per cent lived in regional areas (DESE, 2020).

To effectively use available resources, it would be advisable for universities to explore which processes and structures play a role in supporting student mental health. This research is underpinned by the AUMHF - "Principle 6 - Continuous improvement and innovation is informed by evidence and helps build an understanding of what works for student mental health and wellbeing" (Orygen, 2020a, p. 50). Consequently, as well as determining the prevalence of psychological distress, this study examines the concurrent outcomes of a strength-based social support culture, a *modifiable* determinant of psychological wellbeing to counter increased psychological distress from COVID-19.

## Theoretical framework

The AUMHF report states that "structural barriers to enhancing university students' mental health and wellbeing were evident throughout development of the framework, including the limited research and evidence specific to students" (Orygen, 2020a, p.4).

The current study contributes to the research and evidence specific to students' mental health. The study examines mental health through a lens of diversity for students who bring a variety of strengths from their lived experiences. Furthermore, mental health can be examined in terms of a 'capabilities approach' (Sen 1985), alongside the notions of social and navigational capital (Bourdieu & Passeron, 1977; Yosso 2005), to explore the whole of universities' structures and processes as they act as either inhibitors, catalysts, or accelerants to the development of optimal wellbeing. Sen (1985, p. 203) argues for "seeing wellbeing in terms of functioning vectors [a set of functionings a person actually achieves] and the capability to achieve them." In this context, we examine capabilities in relation to universities providing (or not) the means to achieve wellbeing.

Within this capabilities approach, Bronfenbrenner's bioecological perspective (Bronfenbrenner & Morris, 2006) provides a useful framework for examining salient contextual and situational factors that affect students' values, beliefs, and decision-making processes around their mental health. This theory views the individual within a complex system of reciprocal relationships, located in a set of nested levels, ranging from more proximal settings (e.g., tutorials and class peers) to more distant and indirect settings (e.g., university-led social support programs at the level of the institution as well as direct collective support from peers with whom they have close daily contact). Institutional structures can be found in the macrosystem (e.g., senior management) through to the microsystem (e.g., tutors at a subject level) and they provide wellbeing support by having tangible structures and processes in place, which students see as prioritising their mental health and translates to knowing they are cared for. Collective support is mainly found in the microsystem where proximal resources are situated. In these settings, if the university is able to provide students with access to the resources to build capabilities, collective support can translate to feelings of belonging and connection to others which students perceive as others caring about their wellbeing.

As such, a broad investigation to map the relationship between students' wellbeing and the structures and processes within the university needs to take into account the micro-orientations of the individual student, including their individual characteristics and their socio-historical conditions of their lived experiences, as well as a macro-orientation of the university culture and context (see Figure 1; Bronfenbrenner & Morris, 2006). Additionally, Bronfenbrenner's mature form of the bioecological theory requires that the influences among the four facets of development, the Process-Person-Context-Time (PPCT model) be considered within the nested levels and interacting systems in which they are embedded (Bronfenbrenner & Morris, 2006). Grounded within the PPCT model, the current research

seeks to find what processes (Process) around the students (Person) were especially salient during 2020 (Time). This study seeks to examine the extent to which COVID-19 pandemic and other disruptions (Context), impact learning and associations with poor mental health. With universities pivoting to less face-to-face learning, reduced social interactions appeared to result in declines in social capital, which also impacted students' mental health. Which students have been most impacted and to what extent, is the focus of this research.

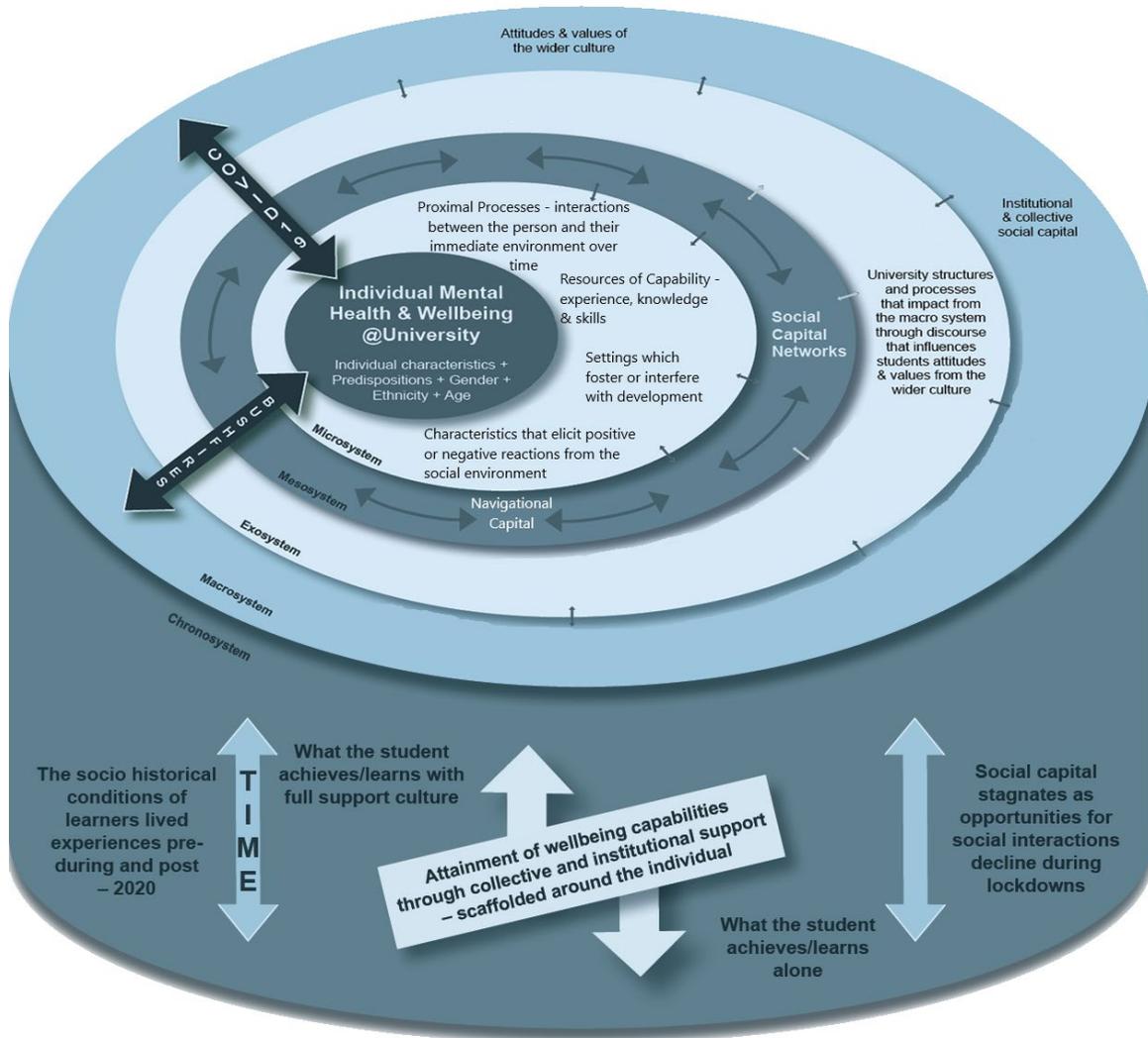


Figure 1. Bronfenbrenner's bioecological model translated for the research focus to include the forces impacting university student's mental health.

## The present study

The AUMHF (2020) provided a timely call for a "settings-based approach which embeds student mental health and wellbeing" (Orygen, 2020a, p. 4) and which is informed by recent evidence. Indeed, a strength-based support culture with "multiple positive-psychological building blocks" (Furlong et al., 2014, p.3) should help mitigate the cumulative psychological distress experienced by the current and future university students impacted by COVID in Australia. This means not only delivering support within the university culture but doing so effectively, monitoring the efficacy of such indicators via cumulative subjective feedback measures of social and emotional wellbeing. Employing a population-based screening

instrument for mental health prevalence will further allow universities to determine where and when to target their resources for maximum long-term sustainable initiatives.

In the wake of COVID-19, the challenges for tertiary institutions will be to determine: 1) the wellbeing status of their student community; 2) whether system-wide responses to improve the social supports for students facing the continued challenges of COVID-19 impact future wellbeing and; 3) which strategies to implement to ensure that student wellbeing is prioritised for all students.

Therefore, our research objectives include:

1. to investigate the prevalence of psychological distress among university students across Australia in 2020.
2. to assess whether equity groups particularly vulnerable to psychological distress (students from low SES backgrounds, rural and regional students, international students, students who identify as having a disability) experience particularly high levels of psychological distress.
3. to explore the experiences of students in relation to the approaches universities have taken as they seek to implement strength-based social support cultures in an effort to mitigate psychological distress.

## Method

The project received ethics approval from the Edith Cowan University Human Research Ethics Committee 19 October 2020, reference number 2020-01913. The recruitment strategies involved the research team gathering contact information from publicly available university websites including from: academic and professional staff (in support and equity), psychology pools, residential colleges, and student associations, to determine a group of interested university *champions*. Over 500 invitations were sent to these champions to invite them to distribute information which included the survey link and QR code, to either post virtually on social media or run off hard copies to distribute through residential colleges. These university champions were approached directly by the research team through emails or direct messaging to advertise the survey to their associated student population. These champions determined their own chain of approval resulting in either support by distribution to students, the email being passed on to another relevant person, the invitation being declined, or the invitation being ignored. Over half of the invitations were not acknowledged in any form (positive or negative), so we have no way of knowing if the students were presented with the invitation to participate or not. The response rate is, therefore, unknown.

This research reports on the survey data collected from students across Australia from November and December 2020 to February 2021, inviting students from all universities across the country to participate. The students were offered to enter a prize draw to win one of 25 vouchers to the value of \$50. Study data are cross-sectional, including survey data with validated scales and an open-ended response collected from the same participants. The Qualtrics (<https://www.qualtrics.com>) survey platform was used to host the survey online which took on average between 10 to 15 minutes to complete, depending on skip pattern. A range of data were collected, including: sociodemographic information (age, gender, residential postcode, university postcode, income, and marital status); context of study information (level of study, field of education, study load, on-campus/off-campus, disruptions, time of government-mandated lockdown); technology access; university support measures; and mental health and wellbeing. At the end of the survey, an open-ended question was asked: "What worked and what was missing?".

This mixed methods research uses an embedded design (Creswell & Plano Clark, 2011) to provide a complete understanding of university students' challenges during 2020. In addition to national quantitative survey data, complementary qualitative data were embedded within the survey instrument, affording two different types of data used for validation in an iterative manner (Yu et al., 2011). In particular, the quantitative data uses validated scales as instruments to show the prevalence and distribution of self-report of the perceptions of the challenges, and in complement, qualitative data uses an open-ended question to describe in more detail the students' experiences within the 2020 academic year. The respective analyses sections below provide further information related to each methodology.

## Sources of data - Measures

### The Kessler Psychological Distress scale (K10)

The K10 was used to assess the degree of psychological distress without identifying its cause (Kessler et al., 2002). The K10 quantifies the frequency and severity of anxiety and depression-related symptoms experienced in the last four weeks, using a 10-item self-report measure that is scored based on a 5-point Likert-type scale with 0 being *none of the time* and 4 being *all of the time* (e.g., "Did you feel so nervous that nothing could calm you down"; "Did you feel that everything was an effort"). Scores are summed with the maximum score of 40, and the minimum score of 0. Lower K10 scores indicate a lower level of psychological distress while higher K10 scores indicate higher levels. Previous research shows that the K10 provides good data-model fit and strong internal reliability estimates within Australian

populations with a mean score<sup>2</sup> of 4.5 among a non-clinical community population (Andrews & Slade, 2001; Brooks et al., 2006; Slade et al., 2011).

### **Collective Support scale**

The Collective Support scale was adapted from the *Social Emotional Health Survey-Higher Education* (SEHS-HE; Furlong et al., 2017). The SEHE-HE is a multidimensional measure of core psychological constructs based on a high-order model of *covitality* (Furlong et al., 2017). Within the self-report, three items measured collective support and were rated on a 5-point Likert scale with 1 being *describes me extremely well* and 5 being *does not describe me* (e.g., "I feel like there is a strong feeling of togetherness on my campus"). Items were recoded with higher numbers represented higher levels of collective support (Figure 13).

### **Institutional Support scale**

The Institutional Support scale was used to assess the degree of support from the various levels of the personnel within the university structure. It was designed to capture the level of assistance that the students felt they had received. Within the self-report six items measured institutional support and were rated on a 5-point Likert scale with 1 being *all of the time* and 5 being *none of the time* (e.g., "How often do you think your university professors and lecturers, tutors care about your health and wellbeing?"). Items were recoded so that higher numbers represented higher levels of institutional support (Figure 13).

### **Covariates**

Several covariates were included in relevant modelling including: gender (0 = *male*, 1 = *female*, 2 = *non-binary sex*); disability (0 = *none identified*, 1 = *identifying with a disability*); rurality (1= *major cities*, 2= *inner regional*, 3= *outer regional*, 4= *remote* and 5 = *very remote*); and first-in-family status (0 = *having a relative at university*, 1= *none*), SES scale (Socioeconomic Indexes For Areas [SEIFA] for education and occupation, ABS, 2016).

### **Open-ended question**

Students were asked to reflect on the past academic year of 2020 and suggest what worked and what was missing.

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<sup>2</sup> K10 Score Level of psychological distress = 0 - 5 Low level of psychological distress; 6 - 11 Moderate level of psychological distress; 12 – 19 High level of psychological distress; 20 - 40 Very high level of psychological distress

## Analysis

The descriptive statistics were presented using graphs, *UpSet plots* and *vtrees* using the statistical and graphing packages within R (R Core Team, 2021). When participants were asked about the crises they had experienced, services they accessed on campus, first-in-family status and technology use they could respond by ticking all that applied to their situation and these response patterns of use are displayed in an *UpSet plot* (Lex et al., 2014; <https://upset.app/>), which is an alternative to the Venn Diagram. This type of plot displays intersecting or co-occurring data within the observation sets as shown in figures three, four, 26, 28 and 29. The total size of each set of observations is represented on the left bar plot. The joined dots within the bottom plot represent every possible intersection of these observations, and their occurrence is shown in the top bar plot. Therefore, each vertical bar represents the number of respondents in the sample who had the combination of devices represented by the joined dots below.

### Quantitative analysis

To determine the association between the independent variables of support (institutional and collective) and the dependent variable of the psychological distress scale (determined from the sum of the 10 questions from the K10, with a range from 0 to 40), regression analyses were conducted using a combination of SPSS (version 27; IBM Corp, 2020) and R (R Core Team, 2021). Specific analysis techniques are further explained within the context of the results section of this report. Covariance structure analysis, using the statistical software package *Mplus 8.6*, analysed the two measurement models (Confirmatory Factor Analysis [CFA]) for the K10 and the university support factors as well as the structural equation model (SEM). The SEM model tested the paths for university support latent factors predicting psychological distress as measured by the K10, using full information Maximum Likelihood Estimation (MLR) with robust standard errors (Muthén & Muthén 2010). This approach uses available data to obtain estimates with missing data and adjusts for non-normality of data (Yuan & Bentler, 2000). The analysis reported that missing data for the indicator variables was less than one per cent. For this report standardised estimates are reported ( $p < .5$ ).

### Qualitative analysis

The responses for the open-ended question were analysed using R (R Core Team, 2021), via a qualitative research method using text mining for sentiment or opinion analysis (Camillo et al., 2005; Hu & Liu, 2004; Janasik et al., 2009; Yu et al., 2011). Text mining is a process whereby text data is collected, and the researcher conceptualises what is happening from empirical analysis of the data (Yu et al., 2011). Text mining (like grounded theory) embodies open-mindedness and discourages preconceptions (Yu et al., 2011). This process is iterative, consistent, and can be replicated as per the criteria for qualitative research principles (Yu et al., 2011). The output is an emergent category system from the process of matching the emotional content of the data (text) with the known sentiment content of words (Silage & Robinson, 2017). For more information on the analysis techniques for text mining, see Appendix 1.

## Results

The results reported below integrate the quantitative and qualitative data in relation to the characteristics of participants, the prevalence of psychological distress, degree of support, and experiences during the academic year of 2020. See Appendix 2 for results related to the profiles of the students: fields of education, level of study, states of Australia, and mode of residence.

### Participants

Of the 1506 students who agreed to participate, four were not eligible as they were not enrolled in university in 2020, eight did not answer more than 10 per cent of the survey, and three completed the survey in less than 3.8 minutes (<0.25 of the median of 15.25 min; longer surveys were due to skip patterns including parent and work sections) so these surveys were deemed ineligible. An institution belonging to a Table B provider had only one participant, so to protect their identity, the data from this participant is reported upon only in the larger groupings. Therefore, a total of 1,490 students were included in the description of each of the 39 universities across Australia (Figure 2 for the breakdown of participant numbers). However, 1,491 participants were included in the majority of analyses where individual students in universities could not be identified.

Table 1 shows the participants characteristics. The mean age was 27.85 years (*SD* 10.35; range 18–74 years), with the majority of the participants being female (78.7.0%). Most participants were Caucasian (62.8%) with 1.7 per cent Aboriginal/Torres Strait Islander. Most participants were studying in New South Wales (31.4%), followed by Queensland (21.9%), Western Australia (19.4%), Victoria (15.6%), South Australia (6%), Australian Capital Territory (ACT; 4%), Tasmania (1.2%) and Northern Territory (0.4%). In total, 71 per cent were studying for an undergraduate degree, with 28 per cent as postgraduate students. There were 42 per cent of the participants classified as low SES as their residential postcode was below the mean of 1,000 (standard deviation of 100) for SEIFA – using the education and occupation index (ABS, 2016).



Note: Table A Australian university providers are reported by the following institutional groupings, on the basis of membership at the end of 2019 (Koshy, 2020): (1) = The Australian Technology Network (ATN); (2) = The Group of Eight (Go8); (3) = The Innovative Research Universities (IRU); (4) = Regional Universities Network (RUN); (5) = Unaligned Group (Other Table A Providers); (6) = Table B Providers.

Figure 2. Participation Count for Each University by Rurality

**Table 1. Characteristics of Participants**

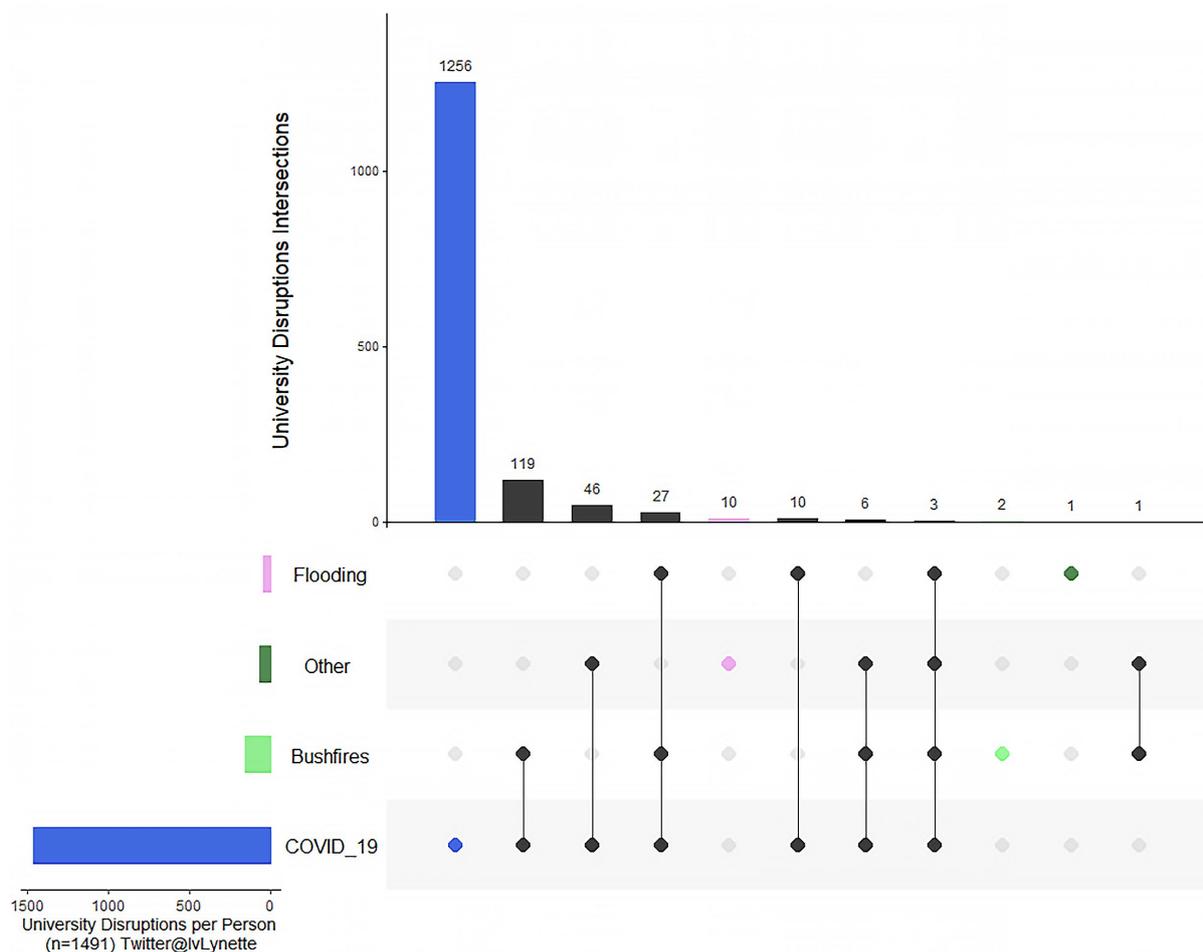
	Institutional Grouping*						
	All 39 universities	Australian Technology Network	Group of Eight	Innovative Research Universities	Regional Universities Network	Unaligned Universities	Table B Providers
	Total Number (%)	Number (%)					
Number (%)	1490.00 (100)	165(11.1)	243(16.4)	384(25.8)	166(11.1)	511(34.3)	21(1.4)
First-in-Family (No relatives)	244 (16.4)	23(13.9)	28(11.5)	61(16)	35(21)	93(18)	4(19)
Living with Disability	54 (3.6)	6	6	17	<5a	22	<5
<b>Gender(%)</b>		<b>Number</b>					
Female	1173 (78.7)	130	176	299	144	409	15
Male	295 (19.8)	33	61	78	19	98	6
Diverse	22 (1.5)	<5	6	7	<5	<5	0
<b>Ethnicity</b>							
1 Caucasian	935 (62.8)	91	128	217	139	345	15
2 Aboriginal/Torres Strait Islander	26 (1.7)	<5	<5	10	5	7	<5
3 Maori & Pacifica	19 (1.3)	<5	<5	12	<5	<5	<5
4 Asian	405 (27.2)	67	96	103	11	123	5
5 Middle Eastern	39 (2.6)	<5	5	17	<5	13	<5
6 African	13 (0.9)	<5	<5	6	<5	<5	<5
8 Unidentified/Mixed Race	36 (2.4)	<5	6	12	5	11	<5
9 American Hispanic & South American	17 (1.1)	<5	<5	7	<5	6	<5
<b>Rurality</b>							
Major Cities of Australia	1200 (80.5)	149	209	333	86	405	18
Inner Regional Australia	212 (14.2)	<10	24	28	62	87	<5
Outer Regional Australia	69 (4.6)	<10	<10	22	15	15	<5
Remote Australia	9 (0.6)	<5	<5	<5	<5	<5	<5

	Institutional Grouping*							
	All 39 universities		Australian Technology Network	Group of Eight	Innovative Research Universities	Regional Universities Network	Unaligned Universities	Table B Providers
<b>Living Arrangement</b>								
Home	875	(58.7)	98	117	212	115	321	12
Private boarding	25	(1.7)	<5	<5	9	<5	6	<5
Rent a house/flat	496	(33.3)	57	88	147	42	155	7
Residential College	91	(6.1)	<10	34	16	<10	28	<5
Homeless	<5	(0.1)	<5	<5	<5	<5	<5	<5
<b>Level of Study</b>								
Diploma	31	(2.1)	<5	5	8	<5	16	0
Undergraduate Bachelor Degree	1027	(68.9)	134	157	263	122	343	8
Postgraduate (Honours, Masters, Grad Dip.)	348	(23.4)	24	65	92	40	115	12
PhD	68	(4.6)	<5	15	17	<5	30	<5
Short/Micro course	<5	(0.1)	<5	<5	<5	<5	<5	<5
Pathway Entry Course	<20	(1.0)	<5	<5	<5	<5	7	<5
<b>Study Load</b>								
Full time Load	1138	(76.4)	131	206	314	90	379	18
Three quarter load	113	(7.6)	12	<15	25	22	42	<5
Part-time (1/2 FTE or less)	236	(15.8)	<25	26	45	54	87	<5
Other - e.g. Internship	<5	(0.1)	<5	<5	<5	<5	<5	<5
	<b>Mean</b>	<b>Std. Dev.</b>	<b>Mean (Std.Dev.)</b>					
Age	27.84	(10.35)	26.1 (9.4)	24.3 (7.9)	27.1 (9.7)	33.8 (11.4)	28.6 (10.8)	29.6 (13.1)
SEIFA- Occupation & Education	1023.2	(50)	1039 (83)	1068 (90)	998 (59)	986 (69)	1027 (79)	1023 (80)
COVID-19 Mobility	-20.02	(11.37)	-22.1 (14.5)	-24.7 (13.0)	-18.0 (7.0)	-15.2 (9.3)	-20.4 (11.9)	-16.1 (6.3)

Note: \* For information as to which university belongs with the named institutional grouping, see Figure 1; <sup>a</sup> Cells less than five (<5) were deidentified. If only one cell was <5 and had the total identified, the next lowest cell was also deidentified.

## Disruptions

From the summer of December 2019 to March 2020, many Australian students experienced extreme weather conditions, including floods and damaging bushfires. These disruptions were coupled with the declaration of a COVID-19 pandemic and lockdowns were implemented across Australia. This resulted in restricted face-to-face teaching, closed campus facilities and lectures, and tutorials moving to an online platform (Universities Australia, 2020a). State and international borders were “closed”, resulting in different settings in each state of Australia. Therefore, the severity of disruption varied for students across Australia who differentially experienced increased challenges around their studies. Figure 3 indicates the breakdown of disruptions experienced by the survey participants (for a description of how to interpret the *UpSet* plot see, <https://upset.app/>). The majority of participants experienced disruptions due to COVID-19 (98%), with 11 per cent of the participants experiencing bushfires and three per cent flooding. Around 10 per cent of students also experienced COVID-19 disruptions and bushfires, with two per cent of students experiencing COVID-19, bushfires, and flooding.



**Figure 3. Disruptions Experienced by Participants Including Combinations of Disruption**

Students studying in 2020 had their education put at risk due to the compounding disasters that some of them experienced; from COVID-19, the bushfires, and other events which impacted on mental health. As well as trying to continue their studies the students indicated that the disruptions added extra layers of hardship onto stressors which cumulate their psychological distress.

*It was very hard to concentrate on my work at times, particular (sic) when my Mum was ill and dying. I was unable to be with her because of COVID travel restrictions and I was not allowed to go to her funeral. My mum did not understand why I couldn't be with her. Six months later and I have had to navigate disposal of precious childhood items and sale of her home all by long-distance mobile calls on bad connections, and it hasn't been easy. I also have anxiety attacks whenever our mobile phone coverage drops out, because it reminds me of when I was evacuated during the 2019/2020 bushfires and had to sleep in a car with 3 cats in cages, not knowing if my partner had survived, or if our home was okay*

## Support services

Students indicated if they had accessed support services offered on campus during 2020 (Figure 4). Out of 1,491 participants, 53 per cent did not access support services. Five students indicated they didn't know support services were available, for example "Did not know any of those existed" (ATN participant). Out of the total number of participants, 26 per cent of participants accessed one support service only, with mental health being accessed the most, either on its own (6%) or in combination with other services. Approximately four per cent of the students accessed three or more support services.

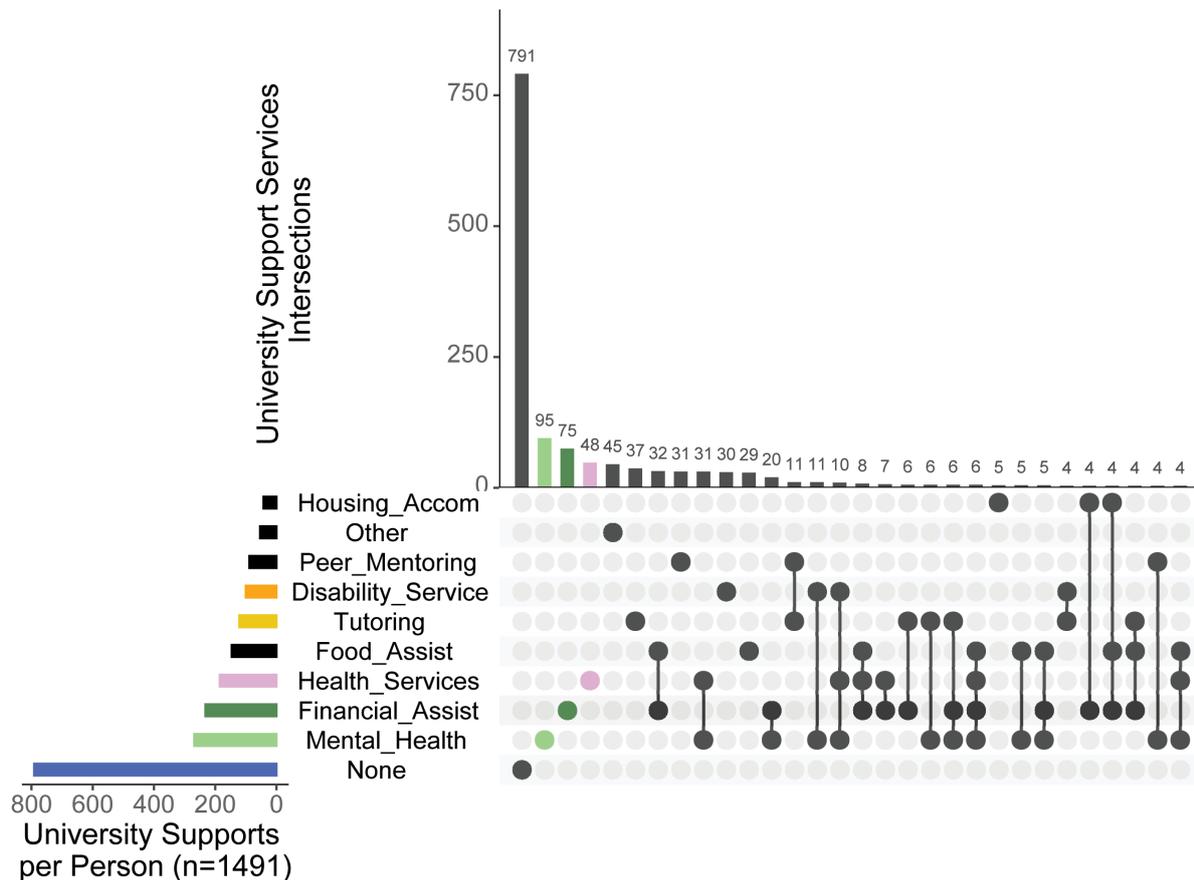


Figure 4. University Support Services Accessed Including Combinations of Access

Some groups of students required more assistance than others. For example, international students often lost their casual incomes and required food assistance:

*There wasn't much financial help for international students but there was food assistance for a long time and that was helpful.*

*The international student team was the only uni affiliated group that truly cared about the students in such a difficult time and offered genuine, tangible support in the form of a free food pantry.*

Other services such as the mental health services were not able to sustain their ability to service students during 2020 and students experienced differences across the main and rural campus of the same university:

*University support was lacking. If anything, we were put under more pressure and held to higher expectations. Very little mental health /financial support. And limited support for those struggling with their units due to mental health difficulties.*

## Qualitative results

There were 1,240 participants who responded to the open-ended question out of 1,491 valid survey responses. These responses contained 57,826 words over of which 33,822 were *stop-words* (common words) and were removed from the analysis. Ten words were numbers and removed and, 'university' was removed (489 occurrences of the word 'university'; see appendix 1). In total, 23,505 words were available to be classified into categories during the sentiment analysis.

To examine the opinions within the responses, sentiment analysis was conducted firstly using the "Bing" Lexicon (Hu & Liu, 2004) to determine the positive polarity and negative polarity of the words and to present them in a comparison wordcloud (see Figure 4; Mohammad & Turney, 2013; Yu et al., 2011). This wordcloud consists of 290-word classifications, of which 92 are positive and 198 are negative. In total 1,725 words were classified as negative and 829 positive, and the frequency of each word classification is indicated by the size of the font. For example, the word or stem for "miss" as in "missing" or "missed" has been categorised via the Bing lexicon (Hu & Liu, 2004) as being negative and was noted by respondents 269 times and so has the largest font size and is positioned on the negative side of the wordcloud (Figure 4; for frequency of the top 20 negative words see Figure 5). The word or stem for "support" as in "supportive", "supporting" or "supported" was similarly categorised but with a positive semantic orientation and was noted by respondents 262 times so has the largest font size and is positioned on the positive side of the wordcloud (Figure 4; for frequency of the top 20 positive words see Figure 5).



*Negative quotes containing “support”*

*There was no support. Classes just went to online mode with little help or support and lecturers expected us to keep up the same motivation / workload / study like nothing happened.*

*I feel as an online student in Melbourne there was no support provided other than approving intermission requests. Trying to make an appointment to see a counsellor at university was also a really long and difficult process that required me to have access to a printer/scanner which I don't have at home.*

The negative polarity for “miss” did not seem to change and indicated that students missed out on academic content as well as human interactions at all levels of the learning experience.

*Negative quotes containing “miss”*

*I feel like I have missed out on many learning opportunities not being on campus.*

*I feel that I missed out on a lot of hands-on learning experiences and do not like to study remotely.*

*I feel that my university really let students and teachers alike down this year. I was without an internet connection for most of semester 1, and my uni could not accommodate for me being unable to attend video lectures/ tutorials, meaning that I missed out on a great deal of content over the year.*

*I missed being at campus and not having as many interactions.*

*I miss the class dynamics, whereby I can hear from the quiet students in the class who don't talk up on zoom. Yet they typically ask the most profound questions.*

*Negative and positive sentiment in the same quote with “miss” – negative polarity - and “enjoy” - positive polarity.*

*I was missing the enjoyment of learning and being taught by people who were passionate about the subject. I lost the opportunity to make new friends and the work felt really draining and unengaging. I don't think the work was delivered in a very interesting way but I think some units did better than others at helping students enjoy first year and care for them.*

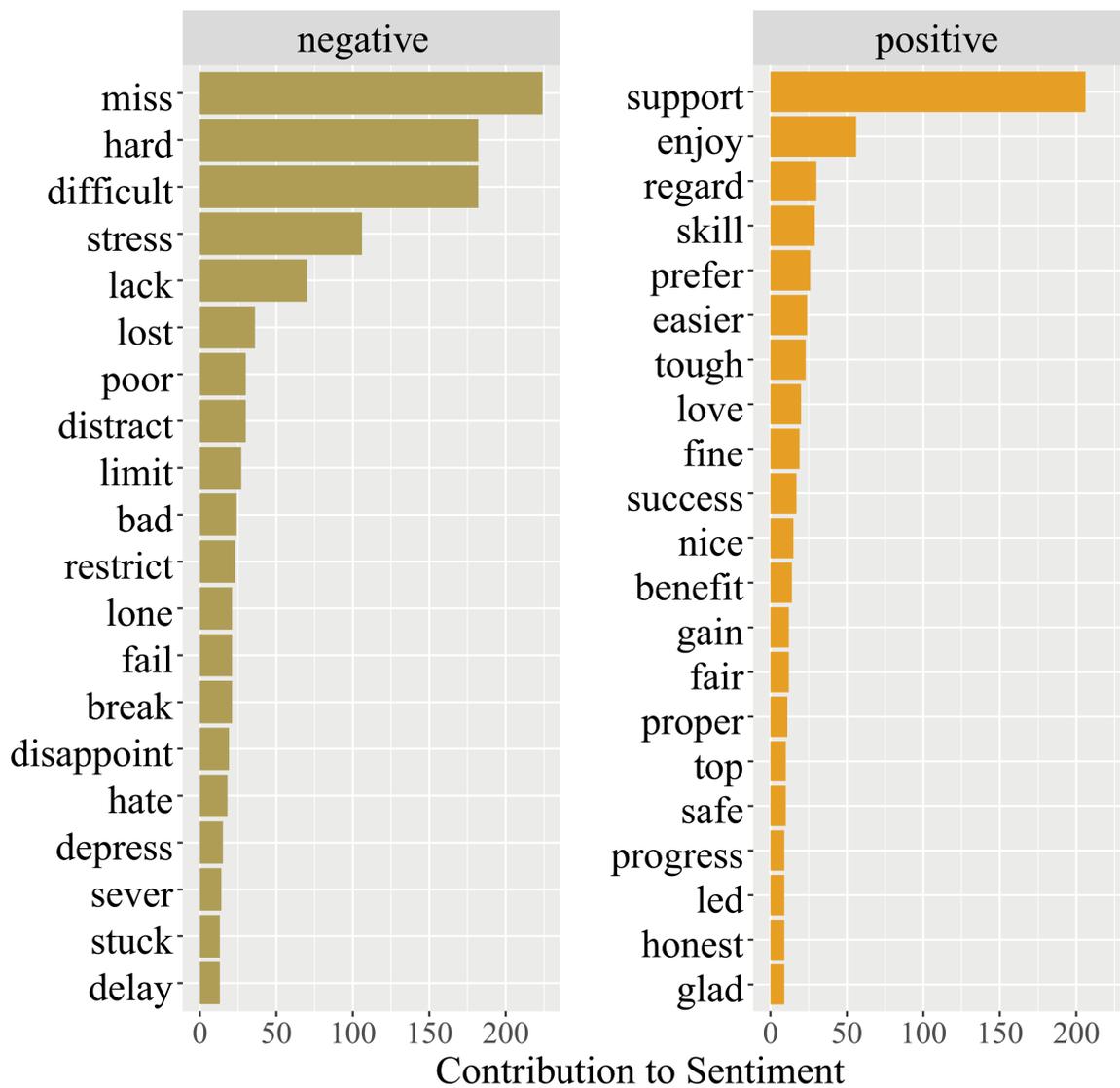


Figure 6. Words that contribute to Positive and Negative Sentiment in the Reflection for 2020 – What Worked? and What Was Missing?

The text responses from participants also conveyed affect (emotions, sentiments, feelings, and attitudes) and were examined using the *NRC Emotion Lexicon* (Mohammad & Turney, 2013). Figures 7 and 8 shows the number of words associated with each of the eight basic emotions as described in Plutchik’s Wheel of Emotions (as cited in Mohammad & Turney, 2013), as well as the polarity of the words. The semantic orientation has different annotations when comparing the *NRC Emotion Lexicon* to the *Bing Lexicon* (see figure 6). This is because the *NRC Emotion Lexicon* has created terms (often nouns as well as adjectives and adverbs) that can be associated with a feeling rather than only adjectives or adverbs which evoke an emotion. For example, teacher, a noun, through crowdsourcing feelings about teachers, has been associated with a positive polarity however, within the *Bing Lexicon* it is not classified. When we compare Figure 6 and the polarity emotion annotations in Figures 7 and 8 (positive and negative graphs), we can determine two different perspectives (adjective or adverb versus nouns), both contributing to our understanding of the challenges faced by university students in 2020.

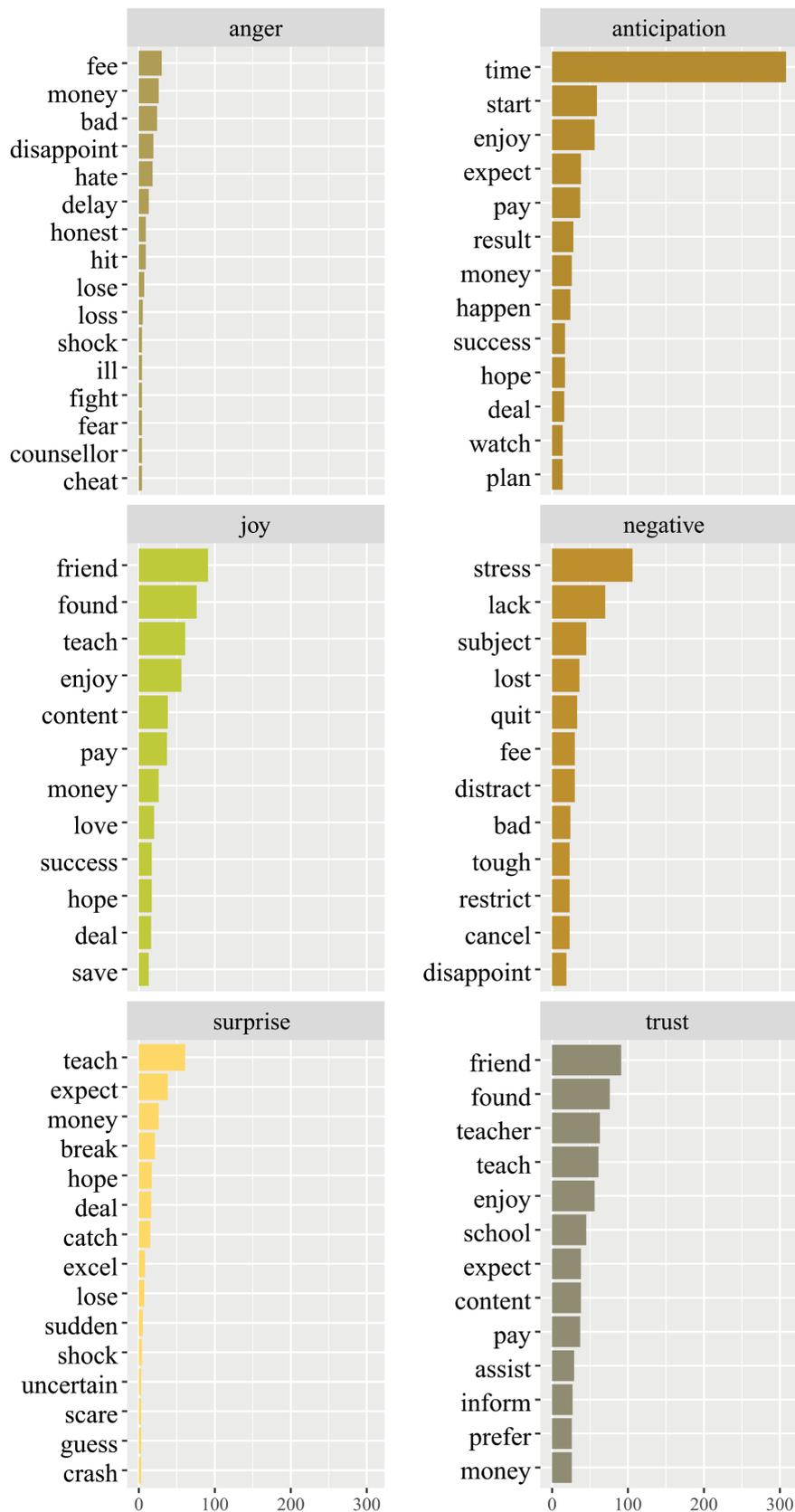
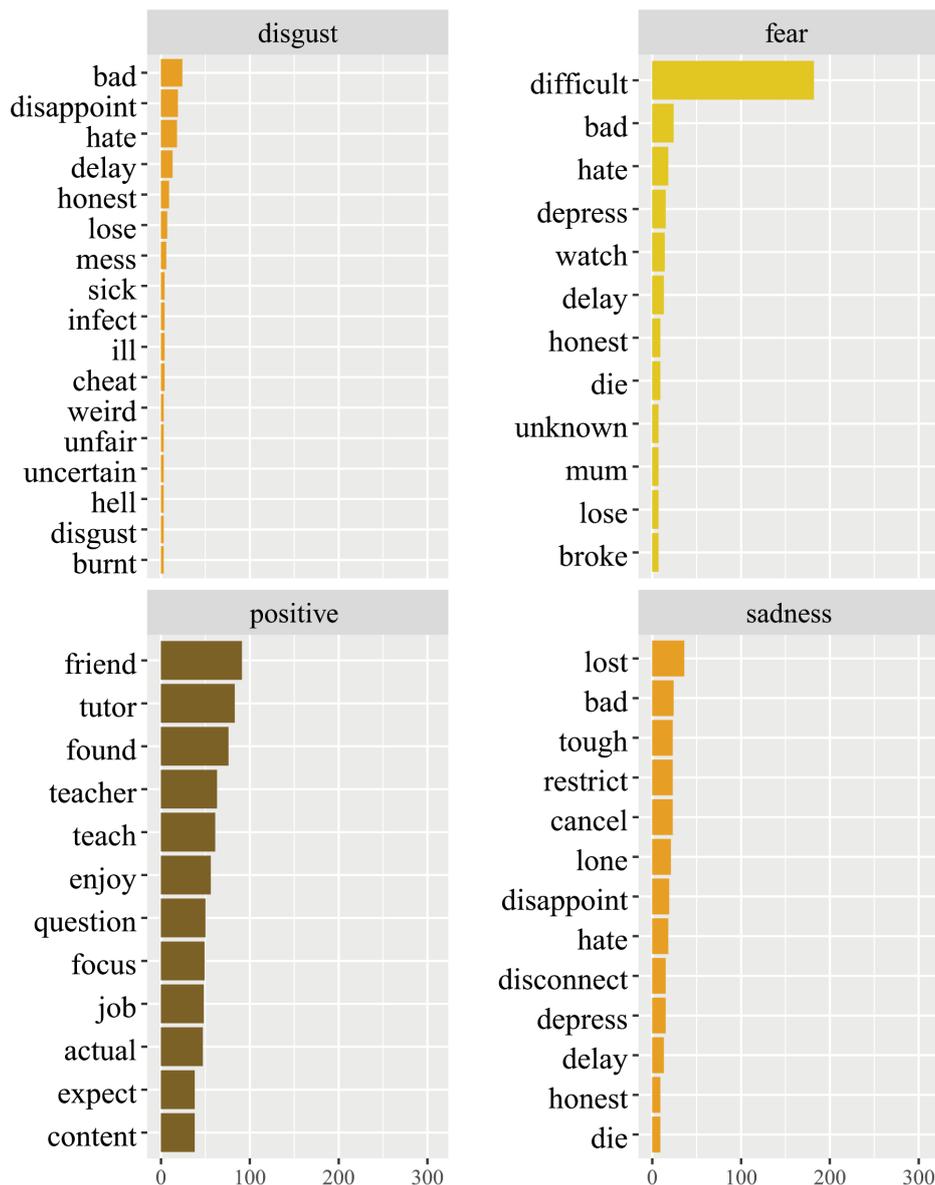


Figure 7. Frequency of Words that Contribute to Eight Basic Emotions as Described in Plutchik's Wheel of Emotions Plus Negative and Positive Sentiments (as cited in Mohammad and Turney, 2013)



**Figure 8. Frequency of Words that Contribute to Eight Basic Emotions as Described in Plutchik's Wheel of Emotions Plus Negative and Positive Sentiments (as cited in Mohammad and Turney, 2013)**

Figures 7 and 8 show that there are around the same frequency of negative to positive words; however, more words are associated with fear and anticipation than with anger, disgust, and sadness. Students expressed an association between fear and anticipation when the whole of Australia entered lockdown in March 2020, and students experienced increased anxiety as they faced an unknown future while imagining many different scenarios:

*Once lockdown came into effect, everything changed; myself and my peers were on edge as the university didn't know their next step, the teachers couldn't tell us anything and people's imagination ran wild with the 'what ifs'. Once online learning became the 'norm' it was excruciating to watch some of my teachers and peers just not understand the basic principles of technology. There was a delay in marking and lectures being uploaded, zoom presentations were disconnecting. The overall sense of team work, mateship, networking and fun had been lost.*

and with students wondering if they should continue studying or give up:

*It was difficult to keep up university as my living situation was unstable for most of the last year and I moved around a lot. The university lecturers often emphasize they care about how COVID impacts us, however, the amount of work required to do is still the same despite the increased stresses on everyone. Especially in times of COVID the very expensive university fees are hard to deal with and are filling me with uncertainty whether I should continue my studies.*

while others were relieved when their lockdowns ended and found conditions returned to their previous expectations of how they would experience university:

*It was a bit difficult to study at home during the first half of 2020 when the quarantine first started. Labs were cancelled or replaced by watching YouTube videos, which got a little wearying on top of the other assessments. Virtual atlas helped with learning anatomy amidst the lockdown, but online learning was not the same as hands-on experience. Things got a lot better in the second half of the year when in-person labs were back.*

Despite the fear and anticipation of what the future held for them, many students embraced the new way of learning and enjoyed the online environment; however, there was the continued thread of missing social interactions:

*Online study according to my own schedule was good because I enjoyed having the flexibility. It was also useful to have my courses as a motivation to have something important to do during my day. There was a lack of social engagement with my peers, but I suppose that was the case with everyone.*

and feeling lonely and isolated:

*It was significantly harder ... As a science student, I found it difficult transitioning to online practical classes as I usually enjoy the hands on classes on campus. ... I found most of all however that the lack of social interaction that I usually would experience on campus had an extremely negative impact on my experience. I often felt lonely and helpless, stuck at my desk studying by myself without the relief of breaks with my friends.*

with many tasks to juggle as well as study:

*It wasn't easy, we were expected to bring results at a high consistency while homeschooling children and no help from outside family members. I also had a baby at home too not in daycare with a FIFO husband who had to work from home and could not be disturbed and so I couldn't find extra time to study, if I did it was late at night. I was doing it mainly on my own.*

In regard to trusting the university processes, there were those who were forgiving due to the situation:

*It wasn't a very enjoyable experience but considering the circumstances of the global health crisis the alterations to the university offering were understandable and I did the best I could within the limitations of the situation.*

While others were less understanding of the universities' capabilities to pivot their mode of delivery to online study:

*Online study was very difficult to stay self motivated, ... fast transition led to some very poorly set up classes/technical difficulties.*

There was strong criticism of communication and lack of transparency around procedures:

*Poor communication from the uni leadership team. ... On top of this, concessions for students were both lacking and poorly communicated. Originally ... proposed a pass/fail system for certain units for certain degrees. This was not clear as to who and what it covered. In addition, extensions/special considerations were supposed to be granted with no medical certification to support students who need extra time due to COVID. This was not enforced with staff/lecturers who could refuse this ruling. It was also not widely circulated, only being advised via a single Facebook post... Posturing at being a supportive, caring institute for its students, when all it cares about is pumping out students with passes and research papers.*

Students needed to have consistency across units of study. They experienced conflicting messaging from staff across the university, so they experienced anxiety:

*Some classes worked alright on the online format ... However, some other classes were not well thought-out or organised properly that it brought confusion amongst students. Moreover, there was often misunderstanding or uninformed knowledge brought out constantly by university staff, which brought the students more distraught and uneasiness.*

and sadness about the loss of sight of the student as an individual+3.

*Sad. Emails about COVID that were sent felt generic and compulsory for the university just to check it off the list. Individual elements/groups did not really reach out to students personally to offer support or organise a virtual or in-person meet up sessions to talk about student hardships. They only provided links to counselling websites aka take your problem elsewhere so it was hard to believe that the students' wellbeing was truly being cared about.*

Students expressed their anger at paying for an education experience that, because of the lockdown, was not delivered:

*Online university was no supplement for face-to-face, especially when practicals were concerned, for example science units. The annoying thing was the uni pushing and pushing saying our education would not be affected and would still be high quality when we all know that's complete and total nonsense... Also, the uni cutting costs negatively affected us as well, my inorganic chemistry lecturer usually has multiple tutors and PhD students to assist him in running the unit but was forced to try and manage over 100 students by himself, marking weekly 'lab' (I never saw the lab in person of course...) reports and assessments by himself, which of course no man could do so everything was always behind making adjustment and improvement nigh impossible. I could go on, but it's just making me angry.*

Positively, if the student experience was managed well then students, even though they did not like online study, were pleased with the change:

*I don't like fully online study at all, but it was necessary at the time. ... online teaching facilities are excellent but no substitute for in person.*

often with the caveat to return to face to face teaching, on campus:

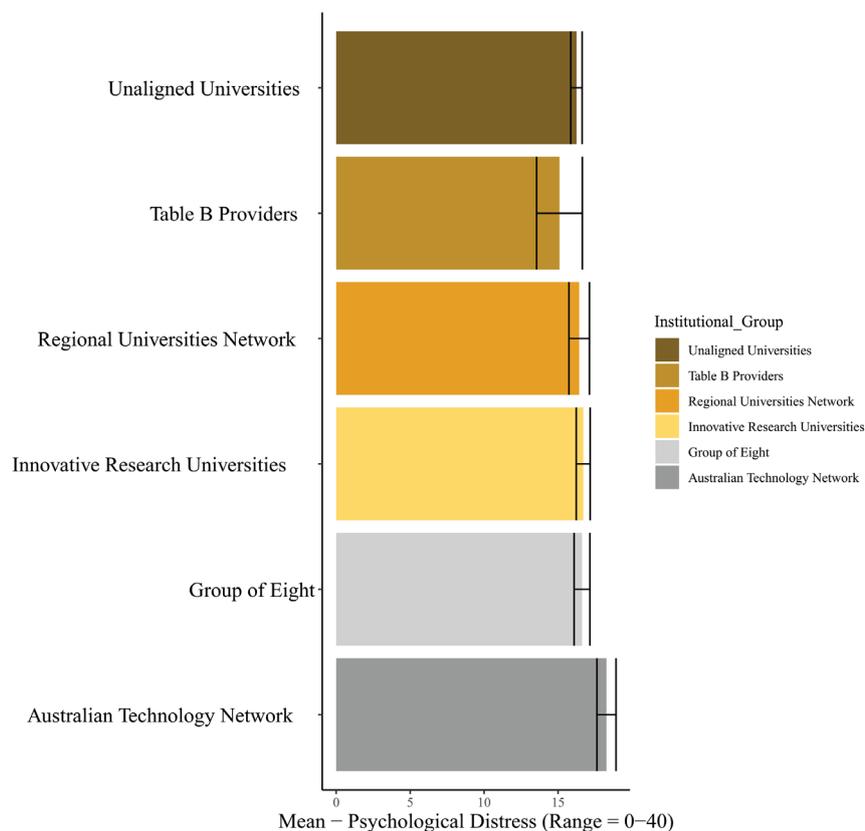
*I enjoyed learning to adapt myself to an online format and building my skills in this area and becoming more adaptable. I do however miss studying face to face and on campus, as I feel that this is where I learn best.*

## Quantitative results

### Kessler 10 - Psychological Distress

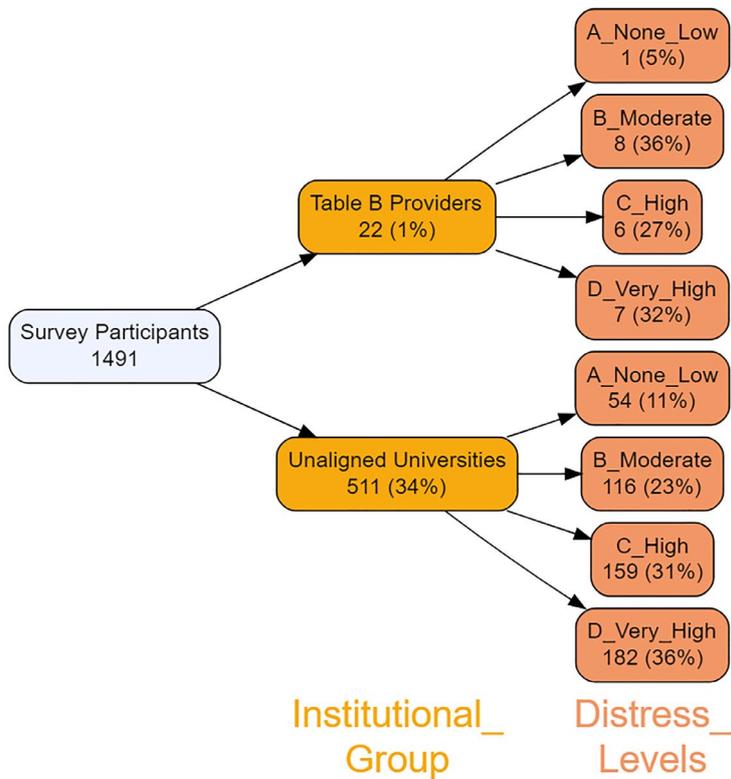
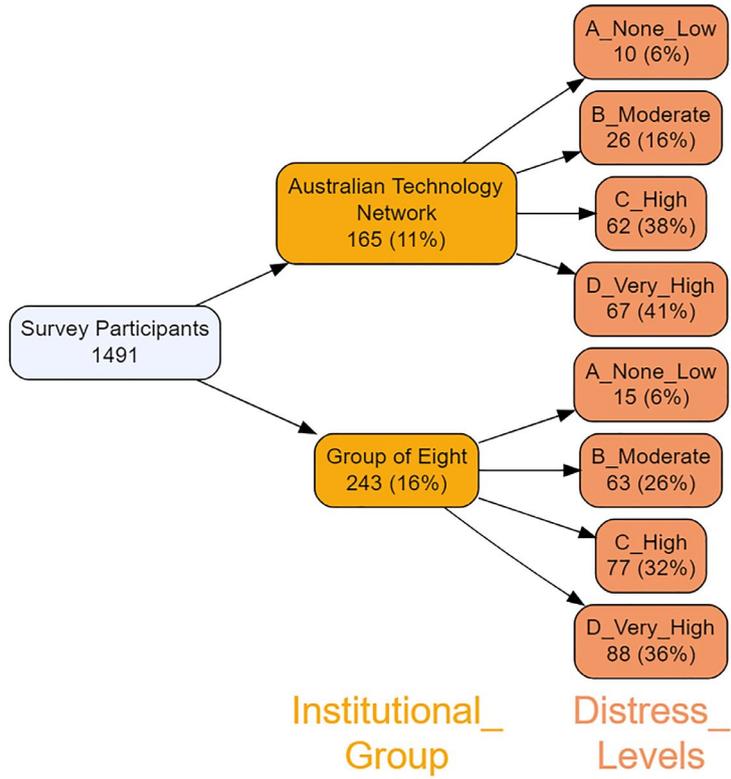
Psychological distress as measured by the K10 for the participants who responded ( $n=1485$ ) had a mean of 16.95, and a median of 17.00 (Range = 0 to 40), the higher scores indicating higher levels of psychological distress. Comparing the data from this project to the scoring cut-offs used previously (ABS, 2007; Sunderland et al., 2011) indicates that 10 per cent of the participants scored under 5 (none to low distress), 19 per cent scored between 6 and 11 (moderate distress), 32 per cent scored between 12 and 19 (high distress), and 39 per cent scored 20 or above (very high distress). The distribution is symmetrical (skewness = 0.3) with the majority of people scoring high to very high distress.

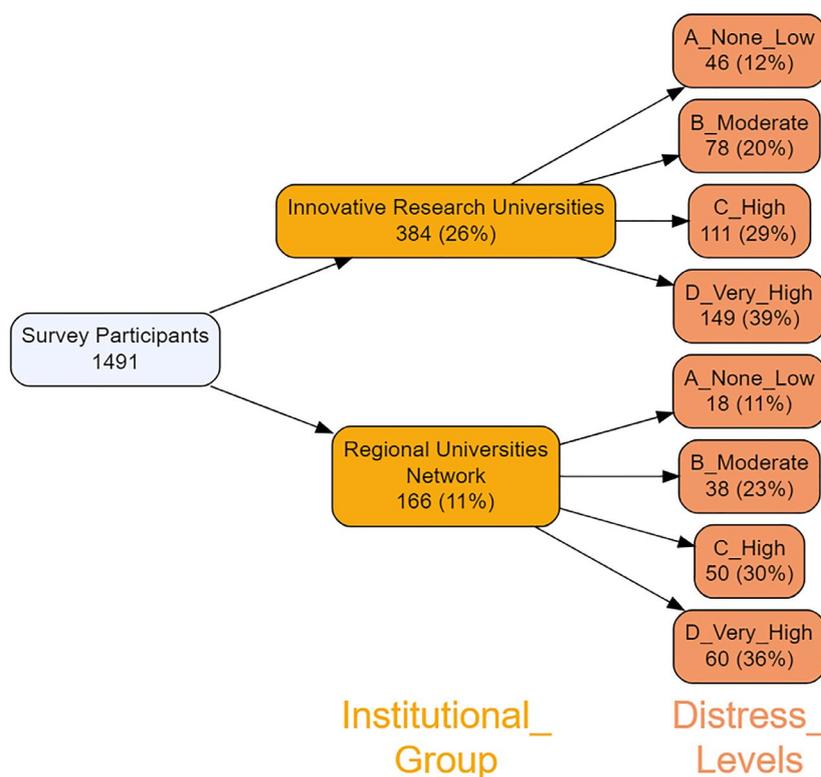
The means for psychological distress for each institutional group are shown in Figure 9 (with standard error bars). To determine if there were mean differences, an analysis of variance (ANOVA) was performed, indicating no significant differences between the mean psychological distress scores for the institutional groups,  $F(5, 1422) = 1.06, p = .38$ . The ATN universities had the highest psychological distress mean, 18.27 ( $SD = 8.24$ ), and the lowest psychological distress mean was within the Table B Providers ( $M = 15.10, SD = 7.08$ ). The nested subsets for each institutional grouping were determined using *vtrees* (R Core Team, 2021) and are shown in Figure 10, with participation responses divided for scoring level cut-offs (ABS, 2007; Sunderland et al., 2011) within the K10. This breakdown indicates that most students reported high to very high distress for each institutional grouping.



Note: For information as to which university belongs within each institutional grouping, see previous details in Figure 2; K10 categories for psychological distress are (ABS, 2007; Sunderland et al., 2011); under 5 (none to low distress), 6 to 11 (moderate distress), between 12 and 19 (high distress), 20 or above (very high distress).

**Figure 9. Means (standard error bars) for Psychological Distress (K10) for Each Institutional Grouping of Universities in Australia**





*“University during 2020 was mentally exhausting and in many ways, demoralising. I reached my mental limits last year in regards to stress and anxiety, and my sleep and physical health were worse than ever during Semester 1”*

(Male, age 22, regional, undergraduate, student studying Society and Culture and Creative Arts - RUN)

Note: K10 categories for psychological distress are (ABS, 2007; Sunderland et al., 2011); under 5 (none to low distress), 6 to 11 (moderate distress), between 12 and 19 (high distress), 20 or above (very high distress).

**Figure 10. Nested Subsets for Institutional Grouping Responses to K10: Levels of Psychological Distress**

## Kessler 10 - Psychological Distress and SES

There was no significant correlation between psychological distress and the SES as classified using the SEIFA *Index of Education and Occupation* (ABS, 2016; see Figure 11). Therefore, the mean for psychological distress ( $M = 16.95$ ) represents participants' psychological distress regardless of the SES (ABS, 2016). Referring to Sunderland and colleagues' (2011) levels of classification for the sum of responses to the K10 questions, a mean of 16.95 indicates students, on average, experienced high psychological distress regardless of their SES.

The COVID Mobility of participants in relation to their Local Government Areas (LGAs) as recorded by Google to map people's work and office movement during COVID-19 lockdowns (<https://www.google.com/covid19/mobility/>) is indicated by the coloured dots in Figure 11. The purple dots represent each participant's lockdown status with a greater negative value, meaning reduced mobility because of COVID lockdowns or stay-at-home health measures from March 22 to November 5, 2020. There was no significant association between COVID-Mobility and psychological distress ( $r = -.03, p = .22$ ). This means that students had a mean of 16.95 for psychological distress regardless of whether they were in lockdown or not.

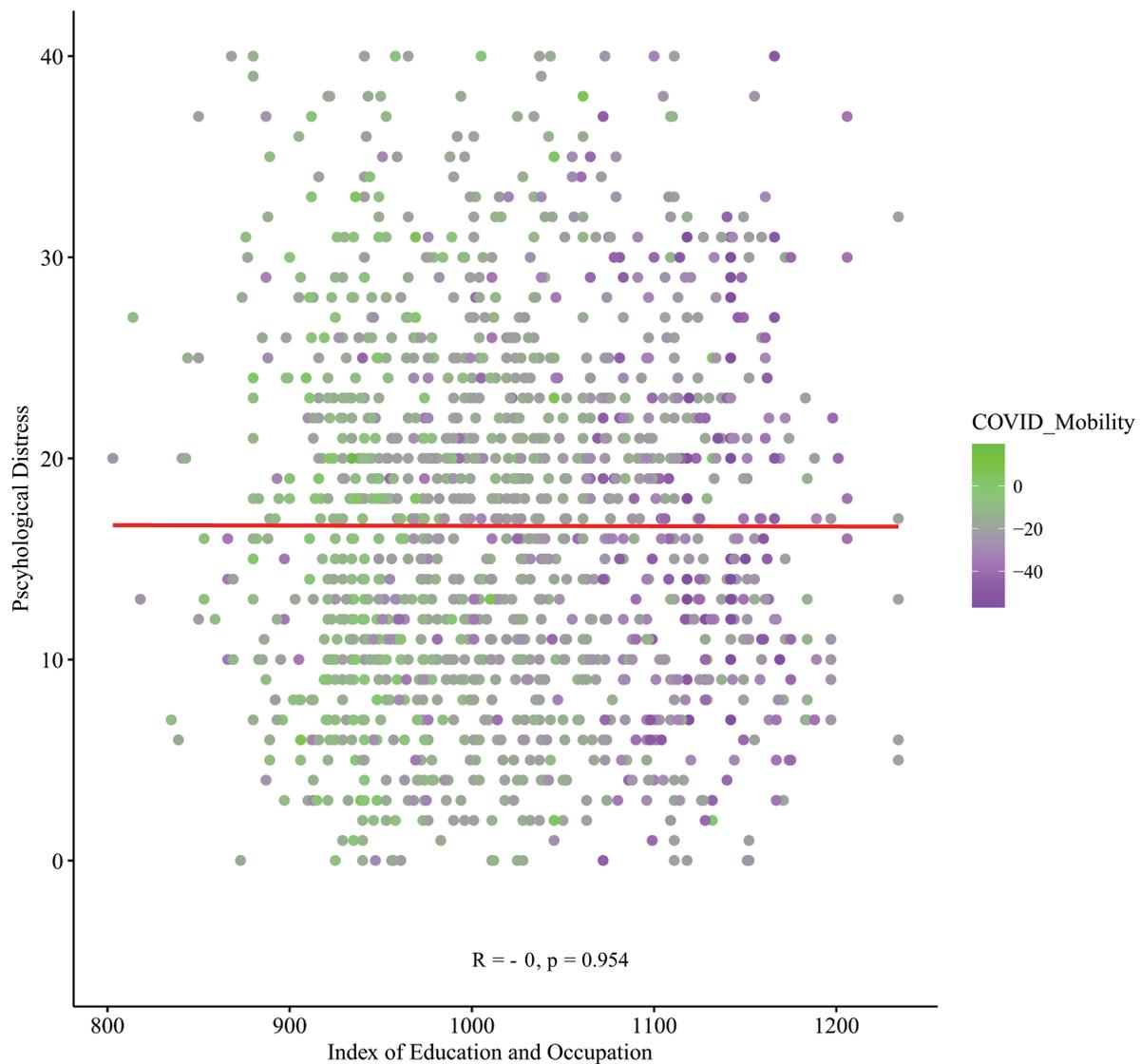
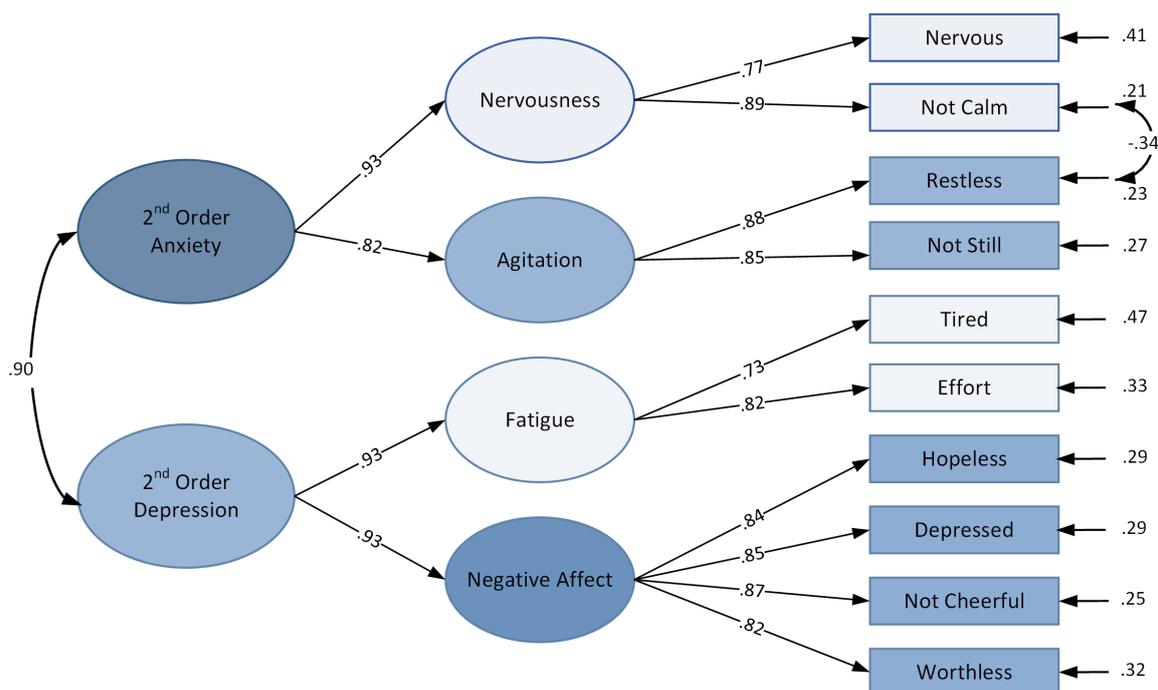


Figure 11. Linear Association Between Psychological Distress and SES

## Confirmatory Factor Analysis

### Kessler 10 - Psychological Distress.

Based on prior evidence and theory bearing on the K10 for psychological distress (Brooks et al., 2006), a second order, two-factor model was specified, in which Nervousness, and Agitation were loaded onto the latent variable of second-order - Anxiety, and in which Fatigue and Negative Affect were loaded onto the latent variable of 2nd order - Depression. The model fit indices and indicators for the first-order factors, Nervousness, Agitation, Fatigue and Negative Affect, their standardised factor loadings and correlations are shown in Figure 12. The common theme between the questions “so nervous cannot calm down” and “so restless cannot sit still” means that the error terms between the two items need to be estimated for improved model fit (Brooks et al., 2006). Estimates across the entire model are commensurate with previous research (Brooks et al., 2006).



$\chi^2_{(29, n=1487)} = 412.69, p = .000, CFI = .96, TLI = .94, RMSEA (90\%CI) = .09 (0.08-0.103), SRMR = 0.032$

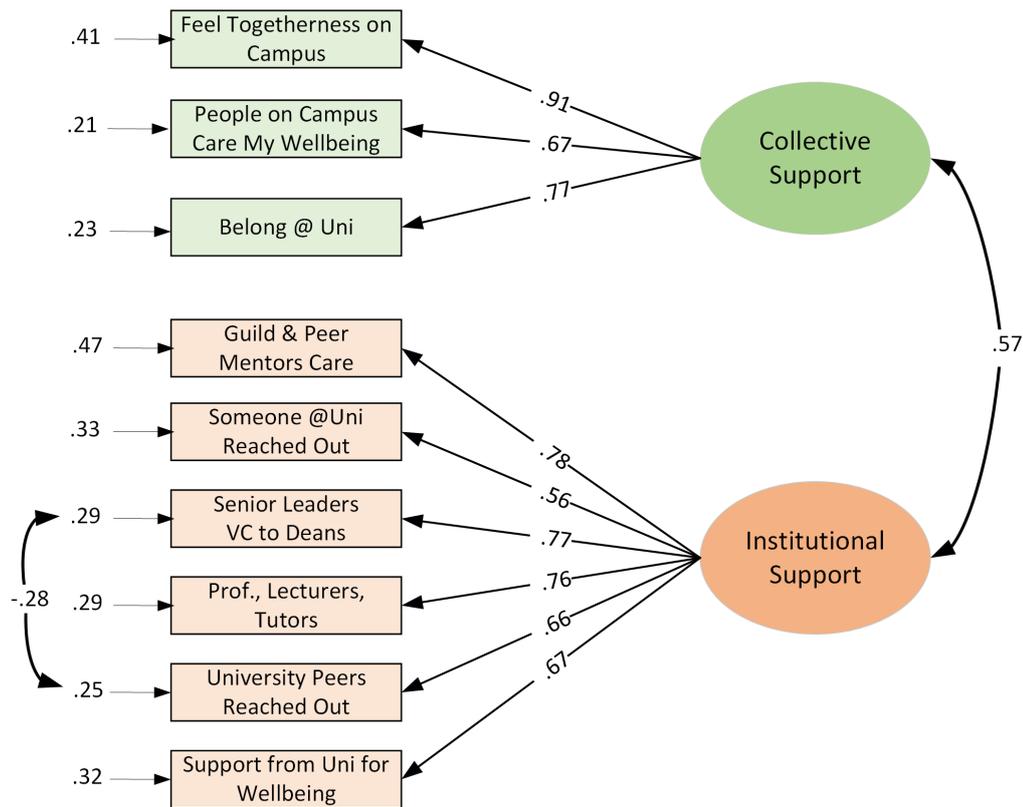
**Figure 12. Confirmatory Factor Analysis of Second-Order Factor Structure for K10 Psychological Distress.**

### Institutional Support and Collective Support.

Institutional support assesses the degree of support students experience from the various levels of the personnel within the university structure, from the senior executives (Vice-Chancellors and senior leaders) to the lecturers and tutors. In contrast, collective support assesses the students' experience of their interactions with their peers and their sense of belonging to the university.

Collective support measures how students feel they are being supported through proximal processes to increase a sense of belonging and connectedness. Within the collective support measurement model, support was based on prior evidence from the validation of the social-emotional health survey for higher education (Furlong et al., 2017). The latent variable – institutional support (measuring the structures and distal processes from the macrosystem to the microsystem) - was determined from a set of questions asking about support within university systems or structures. The final measurement model consisted of two factors for support, with the first factor (Furlong et al., 2017) specified with three items loaded all above .67, onto the latent variable named *collective support*. The second latent variable, *institutional support*, had four items loading greater than .7 (see Figure 13). The items that loaded less than .7 but greater than .55 were retained in the model because of their theoretical significance to cover all aspects of the support structures in the university. On reviewing the residual variances, there were significantly correlated residuals which may suggest redundant content. However, items have been kept in the model as suggested to cover the university support structures. So, the residuals were correlated and specified in the model (for discussion on model specification, see Byrne, 2012). The fit indices showed a good fit (see Figure 13), with the CFI being .95. The model of two latent variables was retained, despite the strong correlation between the two latent variables (.57), as the aim for

this research was to discover the effects of different supports that universities could prioritise to ease psychological distress.

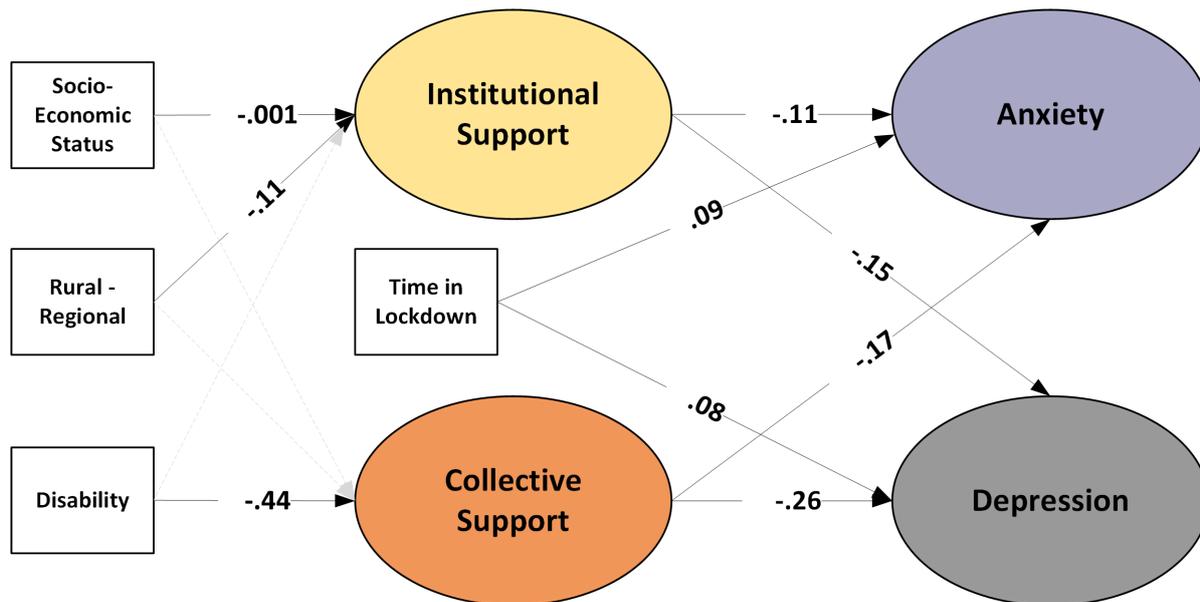


$\chi^2_{(25, n=1490)} = 324.93, p = .000, CFI = .95, TLI = .92, RMSEA (90\%CI) = .09 (0.81-0.99), SRMR = 0.049$

Figure 13. Confirmatory Factor Analysis for the Measurement Model for University Support Services.

## Structural equation modelling

A recursive structural equation model was developed to explore the approaches universities have taken to implement a strength-based social support culture to determine the effects on psychological distress. This model (see standardised estimates in Figure 14) showed adequate model fit  $\chi^2_{(192, n=1490)} = 1499.88, p = .000, CFI = .92, TLI = .91, RMSEA (90\%CI) = .064 (0.061-0.067), SRMR = 0.1$ . Covariates included in the model were SES, gender, rurality, disability and First-in-Family status on institutional and collective support. Lockdown time was controlled for on the 2<sup>nd</sup> order latent variables of anxiety and depression as it was expected that COVID-19 lockdowns would associate directly with the components of psychological distress. This was evident (see Figure 14) where longer times in lockdown were significantly associated, on average, with higher levels of anxiety and depression as measured by the K10. Students who reported higher levels of institutional support, on average, reported lower levels of anxiety and depression. Similarly, when students reported higher levels of collective support, on average, they experienced lower levels of anxiety, and the strongest associations were with lower levels of depression. In total, 19.2 per cent of the variance in psychological distress (depression, 11.8% and anxiety 7.4%) was explained by institutional and collective support.



Note: For indicator variables for each latent variable see Figures 12 and 13; Socioeconomic Status – high values = high SES; Rural – Regional 1=Cities, 2=Inner Regional, 3= Outer Regional, 4= Remote, 5= Very Remote; Disability, 0 = no disability, 1=identifying with a disability; First-in-Family 0 = no, 1=yes; No significant associations with Gender

**Figure 14. Structural Equation Model showing associations between support and anxiety and depression within the K10**

## Group differences

### Analysis

To further investigate group differences, students were allocated to the group or groups they identified with (e.g., university affiliation, degree of rurality, ethnicity, level of study, field of education). Following this, a series of regression analyses for each group estimated the effects of institutional and collective support on psychological distress. This set of statistical processes for estimating these relations between these variables was performed using SPSS (IBM Corp, 2020), with the results graphed for each identified group using *R* (R Core Team, 2017).

Firstly, a hierarchical regression analysis was conducted with gender, rurality, SES, and identified disability status entered in Step 1. At Step 2, institutional support was entered. At Step 3, either institutional or collective support was entered to determine the associations with psychological distress with the final model (model 3) results being tabulated. The adjusted  $R^2$  was presented in the table and represents the coefficient of determination of the regression and is used to explain the proportion (percentage) of variance explained by the linear relationship (e.g.,  $R^2 = .12$  means that 12 per cent of the variation in the dependent variable is explained by the independent variables).

Secondly, using an *R* graphing package (*ggplot2*), separate scatterplots displayed, for each grouping, the relation between each independent variable, either institutional or collective support and the dependent variable psychological distress (created from the sum of the 10 questions as per the K10 with a range from 0 to 40). The trend in this relation was then determined using a simple linear regression line (for each group of interest) with the linear pattern indicating the relation between psychological distress and either institutional or collective support. The shaded area around the regression line indicates the 95 per cent confidence interval around the line. The more shading around the line the larger the

confidence interval. The multiple correlation coefficient  $R$  is reported for each association between the independent variable (institutional or collective support) and the dependent variable psychological distress. This estimate denotes the strength of the association (effect size) between the two variables and is presented at the bottom of each graph with the associated significance level for each group. To help with interpretation of the effect sizes a *rule of thumb* via Cohen's effect size magnitudes (Cohen, 1992) can be used to indicate the degree of the effect; for correlations from .10 to .30 the effect is said to be from small to medium, from .30 to .50 the effect is said to be from medium to large and for correlations greater than .50 the magnitude of effect is said to be large to very large (Cohen, 1992).

The results are presented separately for each independent variable with a short introduction to outline the group differences.

### University affiliations

Students nominated the university they were attending, with each university affiliated with one of six institutional groupings (see Figure 2 for university classifications into institutional groupings). The mean differences for psychological distress for each university affiliation group (with standard error bars) were presented previously in Figure 7 above and showed no significant differences in the mean levels of psychological distress for each affiliation.

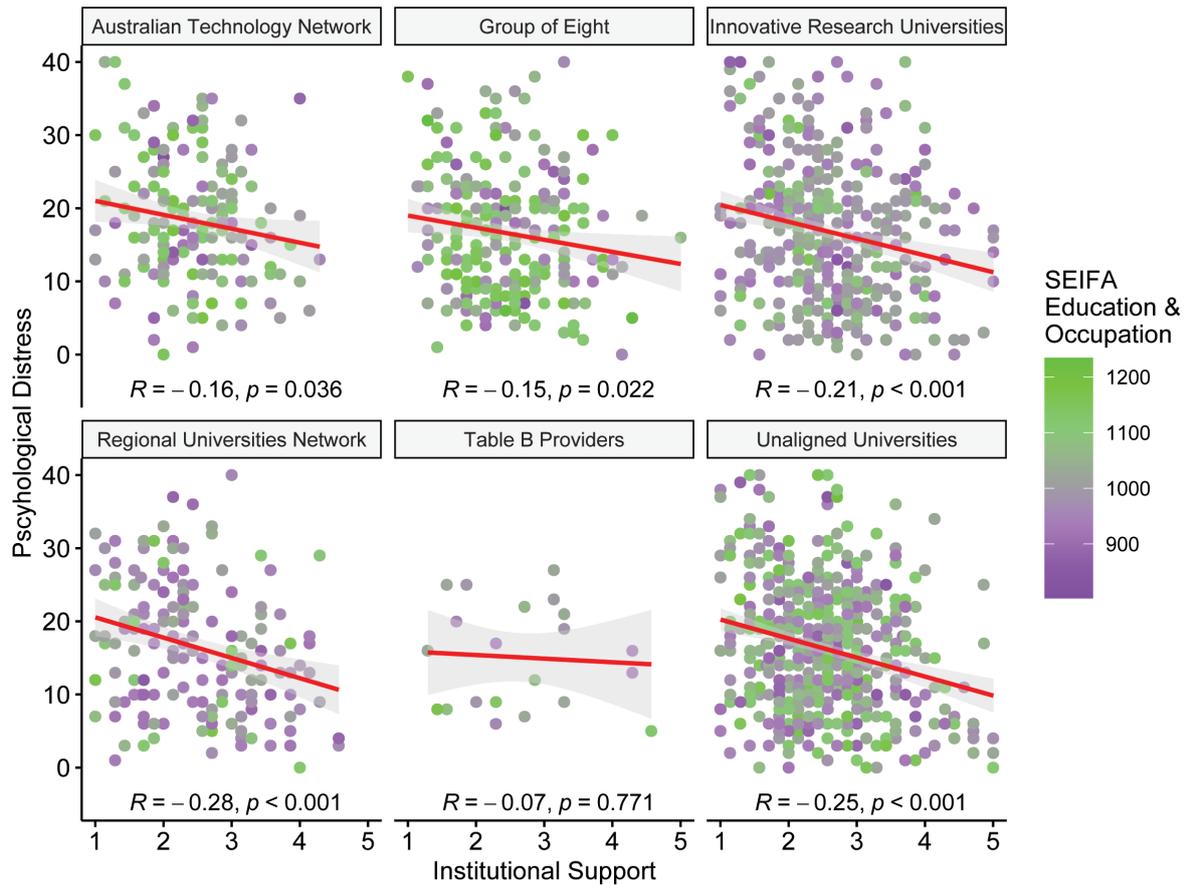
Using the students' identified university affiliation group, a hierarchical regression analysis was used to examine the associations between psychological distress and reported institutional and collective support levels, including covariates in Step 1 as indicated in the analysis section above. Table 2 presents a summary of the final model (model 3) estimates. Fourteen per cent of the variance in psychological distress was accounted for by the combination of institutional support and collective support for participants in the unaligned institutional groupings. The scatter plots with linear regression lines, and 95 per cent shaded confidence interval around the line show the associations for psychological distress on institutional support (Figures 15) and collective support (Figure 16).

The associations between institutional support and psychological distress were significant and of small to medium effect size for all the groupings except the group within the Table B providers. The trend showed in all groupings (except the Table B providers) that, on average, those reporting higher levels of institutional support had lower levels of psychological distress. The relation between collective support and psychological distress was strongest in the RUN institutional grouping, with students reporting, on average, higher levels of collective support associating with lower levels of psychological distress. Again, the significant correlations indicate the effect size for the groupings were between .19 (small to medium effect size) for students in the ATN and .33 (medium effect size) for students within the RUN grouping.

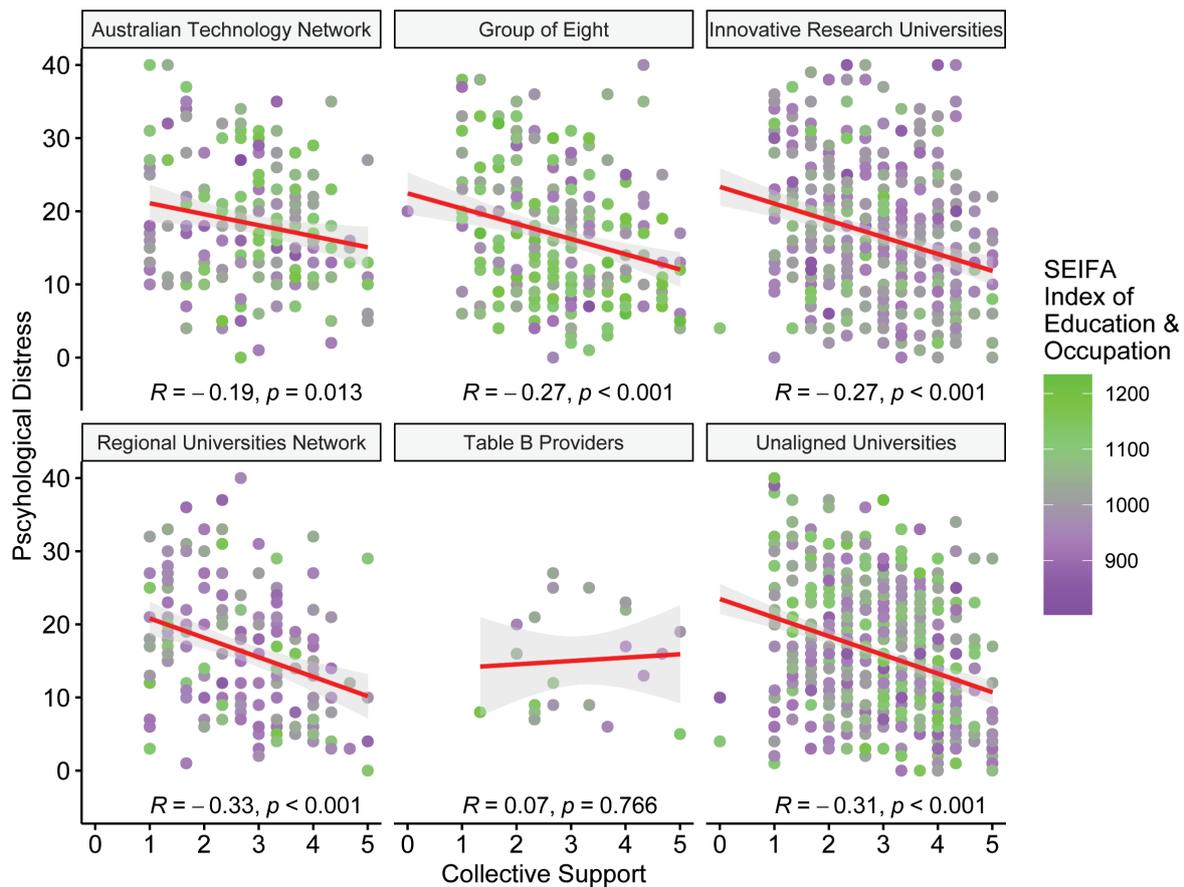
**Table 2. Regression Coefficients of Institutional and Collective Support on Psychological Distress for Each University Affiliation**

	Australian Technology Network (ATN)			Group of Eight (Go8)		
Variable	<i>B</i>	<i>SE B</i>	$\beta$	<i>B</i>	<i>SE B</i>	$\beta$
Institutional Support	-1.06	1.01	-.09	-0.06	0.84	-.01
Collective Support	-1.12	0.7	-.14	-2.15	0.59	-.27***
<i>R</i> <sup>2</sup> Adjusted		0.09			0.08	
<i>F</i> for Model (df)	(6, 157)	3.57**		(6, 234)	4.25***	
	Innovative Research Universities (IRU)			Regional Universities Network (RUN)		
Variable	<i>B</i>	<i>SE B</i>	$\beta$	<i>B</i>	<i>SE(B)</i>	$\beta$
Institutional Support	-1.22	0.59	-.11*	-1.26	0.94	-.13
Collective Support	-1.93	0.47	-0.23***	-1.84	0.75	-.23*
<i>R</i> <sup>2</sup> Adjusted		0.09			0.1	
<i>F</i> for Model (df)	(6, 375)	7.55***		(6, 158)	3.86**	
	Unaligned Universities			Table B Providers		
Variable	<i>B</i>	<i>SE B</i>	$\beta$	<i>B</i>	<i>SE B</i>	$\beta$
Institutional Support	-0.88	0.52	-.08	-0.67	2.27	-.09
Collective Support	-2.33	0.41	-.28***	0.52	2.23	.08
<i>R</i> <sup>2</sup> Adjusted		0.14			0.18	
<i>F</i> for Model (df)	(6, 501)	14.26***		(6, 15)	1.53	

Note: Model 3 presented; Dependent Variable = Psychological Distress, Range = 0-40; \*p < .05. \*\*p < .01, \*\*\* p<.001; Covariates entered in Step 1 were gender, SES, identified disability, rurality.



**Figure 15. Scatterplot and Regression Line - Relation Between Institutional Support and Psychological Distress for Each University Affiliation**



**Figure 16. Scatterplot and Regression Line - Relation Between Collective Support and Psychological Distress for Each University Affiliation.**

## Gender

Students reported one of three gender categories. There was a significant effect of gender on psychological distress,  $F(2, 1484) = 7.84, p < .05$ . The students who identified as non-binary sex had, on average, the highest psychological distress,  $M = 20.27$  ( $SD = 9.75$ ), the lowest psychological distress scores, on average, was for males,  $M = 15.07$  ( $SD = 8.94$ ), and identifying as female had a mean of  $17.01$  ( $SD 8.61$ ). As outlined in previous national surveys on mental health and wellbeing (ABS, 2007; Sunderland et al., 2011) the scoring cut-offs indicate if the participants scored under five they were classified as having none to low distress, between six and 11 having moderate distress, between 12 and 19 experiencing high distress, and 20 or above having very high distress.

Examining the association between support (institutional and collective) and psychological distress (Table 3) shows, 11 per cent of the variance in psychological distress was accounted for by the combination of institutional support and collective support for students in the male category. Those in the non-binary sex category did not show any significant association possibly due to the low number of respondents in this category. This is a limitation of this finding and is also illustrated by the wider confidence intervals (grey shaded area) around the regression lines for this category (see Figure 17 and Figure 18). The scatter plots with linear regression lines and 95 per cent shaded confidence interval around the line show the associations for psychological distress on institutional support (Figure 17) and collective support (Figure 18). The associations between institutional support and psychological distress were significant and of small to medium effect size for male and female groupings however the association was not significant for the students who identified as non-binary sex. The relation between collective support and psychological distress was

significant and strong for both male and female students, reporting, on average, higher levels of collective support associating with lower levels of psychological distress with the effect sizes approaching medium in magnitude.

Females found studying hardest during lockdown if they were also responsible for schooling their children at home. This 29-year-old, female parent felt proud of her abilities to meet the challenges of parenting, home-schooling and studying:

*University was really hard to juggle while schooling four young children from home with a toddler in tow... I think what worked was just taking one day at a time and trying to focus on what was important. I'm proud of myself and my children for what we achieved despite the challenges.*

However, other females had to drop out or take leave as they couldn't juggle family, especially if home-schooling was involved, and study during the pandemic and this has caused a flow-on relationship strain:

*I had to drop out of first semester as I did not have the capabilities to home school my child and study.*

(33-year-old female)

*I had to take a leave of absence as I couldn't juggle family and study. ... Relationship strain is at braking (sic) point.*

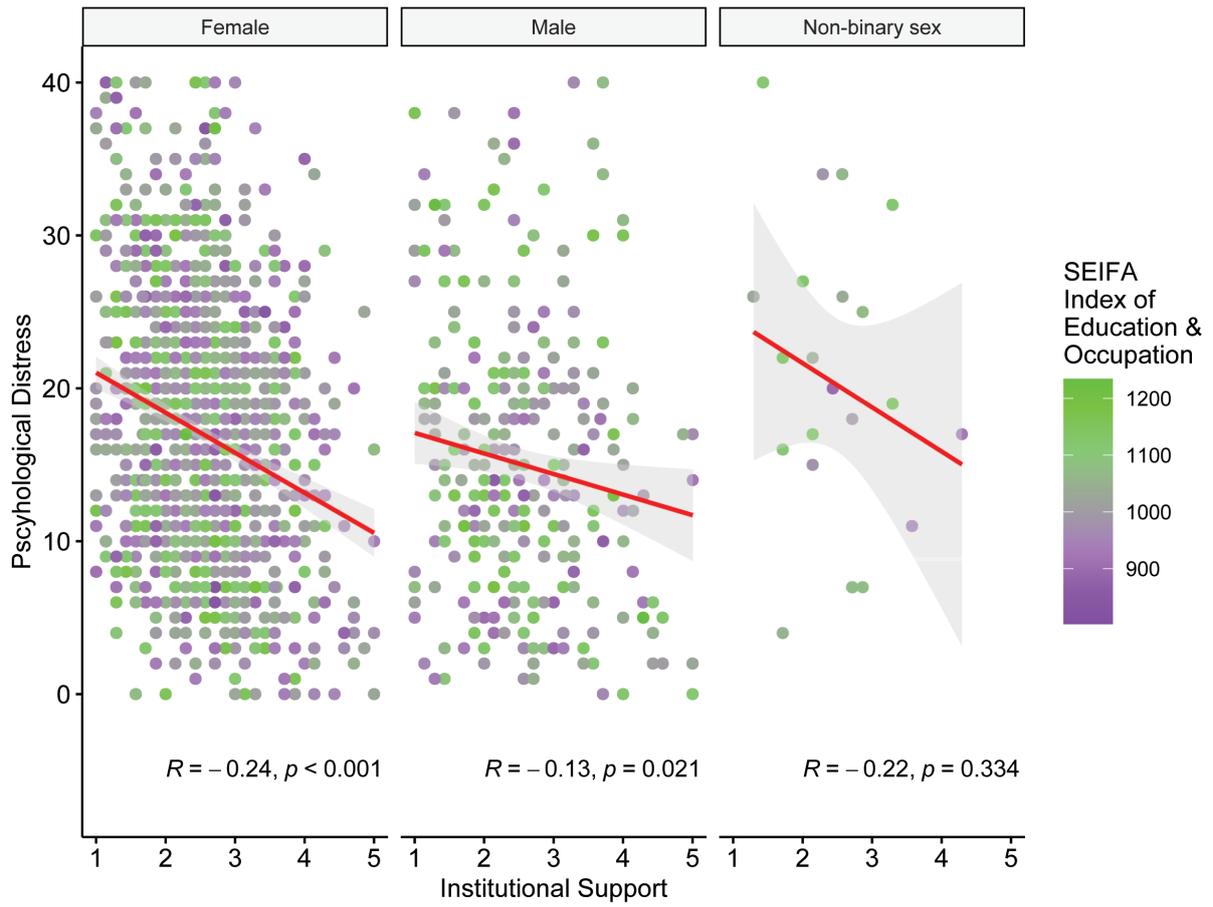
(46-year-old female)

**Table 3. Regression Coefficients of Institutional and Collective Support on Psychological Distress for Each Gender Category**

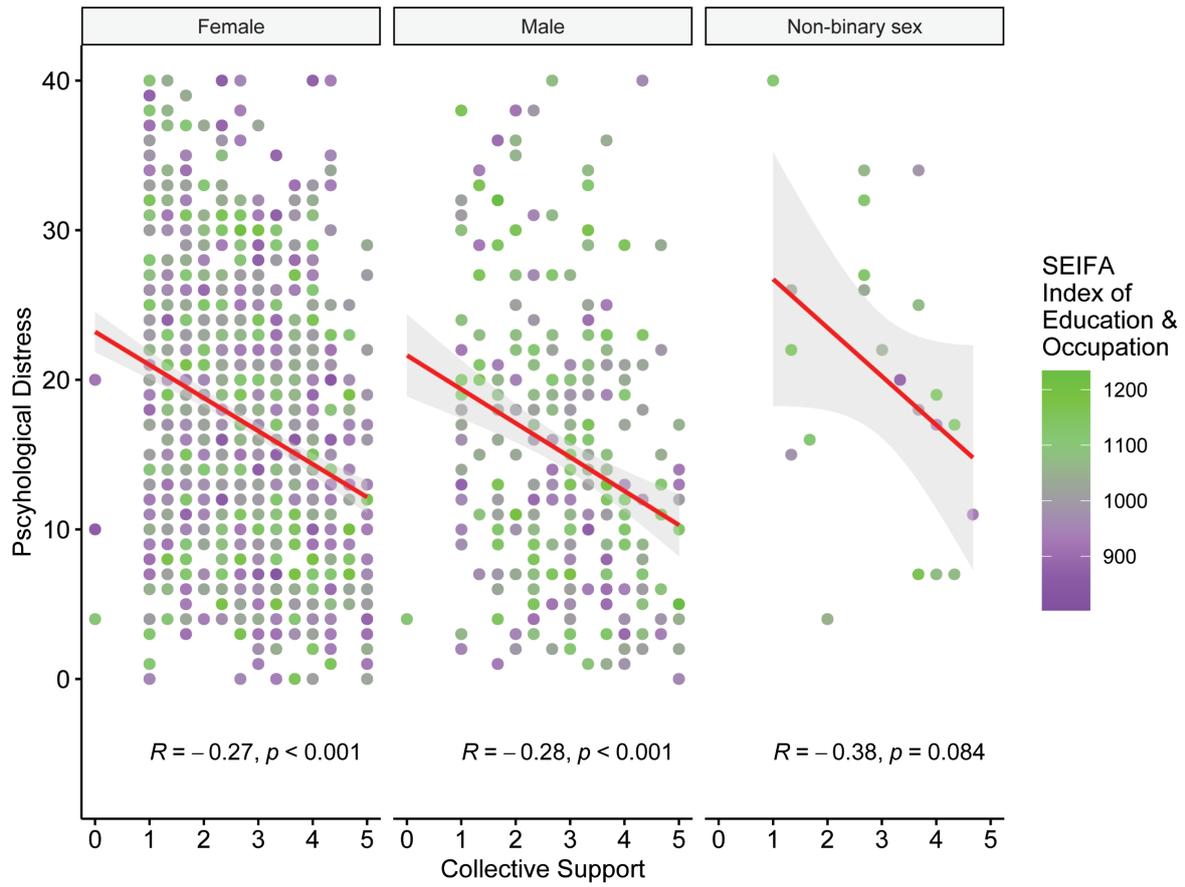
Variable	Non-binary sex			Female		
	<i>B</i>	<i>SE B</i>	$\beta$	<i>B</i>	<i>SE B</i>	$\beta$
Institutional Support	2.7	5.75	.21	-1.47	0.35	-.14***
Collective Support	-4.43	3.15	-.51	-1.71	0.26	-.21***
Adjusted <i>R</i> <sup>2</sup>		0.11			0.09	
<i>F</i> for Model (df)	(5, 16)	0.60		(5,1159)	24.52***	
Male						
Variable	<i>B</i>	<i>SE B</i>	$\beta$			
Institutional Support	0.74	0.68	.07			
Collective Support	-2.76	0.54	-.34***			
Adjusted <i>R</i> <sup>2</sup>		0.11				
<i>F</i> for Model (df)	(2, 288)	7.84***				

Note: Model 3 presented; Dependent Variable = Psychological Distress, Range = 0-40; \**p* < .05. \*\**p* < .01, \*\*\* *p* < .001; Covariates entered in Step 1 were SES, identified disability, rurality.

**Figure 17. Scatterplot and Regression Line - Relation Between Institutional Support and Psychological Distress for Each Gender**



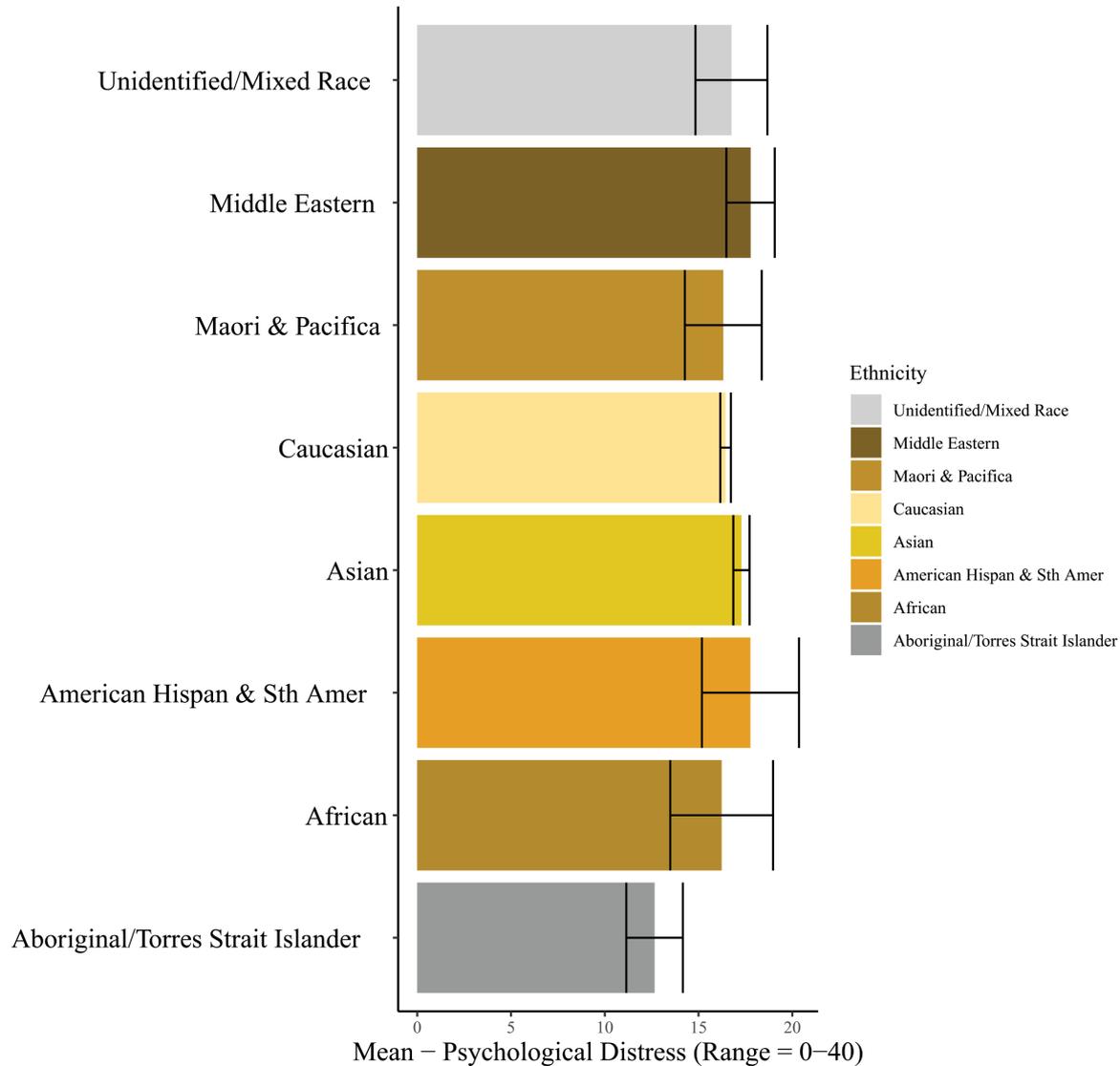
**Figure 17. Scatterplot and Regression Line - Relation Between Institutional Support and Psychological Distress for Each Gender**



**Figure 18. Scatterplot and Regression Line - Relation Between Collective Support and Psychological Distress for Each Gender**

## Ethnicity

Students reported one of eight ethnicity categories. An ANOVA, conducted to determine if there were group differences for psychological distress, indicated no significant differences between the mean psychological distress scores for ethnicity,  $F(7, 1420) = 1.18, p = .31$ . The means for ethnicity are shown in Figure 19 (with standard error bars).



Note: K10 categories for psychological distress are (ABS, 2007; Sunderland et al., 2011); under 5 (none to low distress), 6 to 11 (moderate distress), between 12 and 19 (high distress), 20 or above (very high distress).

**Figure 19. Means (standard error bars) for Psychological Distress (K10) for Ethnicity Groups in Australia**

Examining the association between support (institutional and collective) and psychological distress (Table 4) shows, 41 per cent of the variance in psychological distress was accounted for by the covariates and a combination of institutional support and collective support for students identifying as Aboriginal and Torres Strait Islanders. Additionally, the relation between collective support and psychological distress was significant and the strongest for students identifying as Aboriginal and Torres Strait Islanders. Those in the categories which did not reach significance were not included in Table 4 and these nonsignificant findings may be due to the low number of respondents in those categories. Figures 20 and 21 show the scatterplots with linear regression lines for all categories with 95 per cent shaded confidence

interval around the regression line to show the associations for psychological distress on institutional support (Figure 20) and collective support (Figure 21). When examining these simple regressions for students from Aboriginal and Torres Strait Islander cultures there was a large effect size for the association between collective support and psychological distress but no significant association between institutional support and psychological distress. For students from Aboriginal and Torres Strait Islander cultures, on average, higher levels of collective support associated with lower levels of psychological distress. This trend, of similar magnitude, was also present for students from American, Hispanic and South American cultures and Middle Eastern communities. The same trend of moderate magnitude was evident for students who identified as Caucasian or Asian cultures. Higher levels of institutional support associated with lower levels of psychological distress for students from Caucasian, Asian and Middle Eastern backgrounds but their magnitude of effect was moderate. One caveat here is caution in interpretation is required due to the lower numbers in some of the minority ethnicities (see Table 1 for details of demographics).

**Table 4. Regression Coefficients of Institutional and Collective Support on Psychological Distress for Significant Ethnicity Categories**

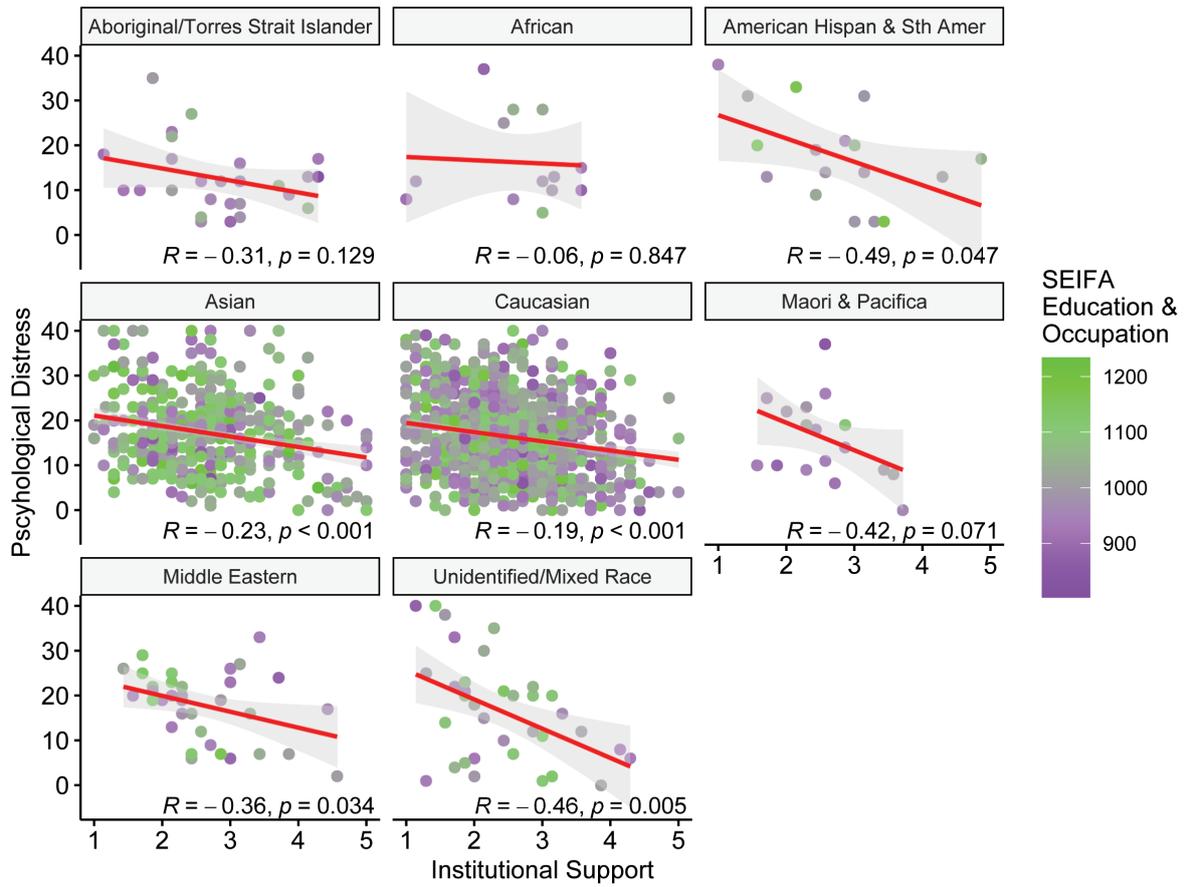
Variable	Caucasian			Aboriginal & Torres Strait Islander		
	<i>B</i>	<i>SE B</i>	$\beta$	<i>B</i>	<i>SE B</i>	$\beta$
Institutional Support	-0.78	0.41	-0.07	-0.81	1.70	-0.09
Collective Support	-1.80	0.31	-0.22***	-3.20	1.26	-0.49*
<i>R</i> <sup>2</sup> Adjusted		0.08			0.41	
<i>F</i> for Model (df)	(6, 925)	15.22***		(6, 19)	3.92*	
Variable	Asian					
	<i>B</i>	<i>SE B</i>	$\beta$			
Institutional Support	-0.94	0.54	-0.09			
Collective Support	-2.26	0.44	-0.28*			
<i>R</i> <sup>2</sup> Adjusted		0.13				
<i>F</i> for Model (df)	(6,396)	10.66***				

Note: Model 3 presented; Dependent Variable = Psychological Distress, Range = 0-40; \*p < .05. \*\*p < .01, \*\*\* p<.001; Covariates entered in Step 1 were gender, SES, identified disability, rurality. Non-significant groups not included

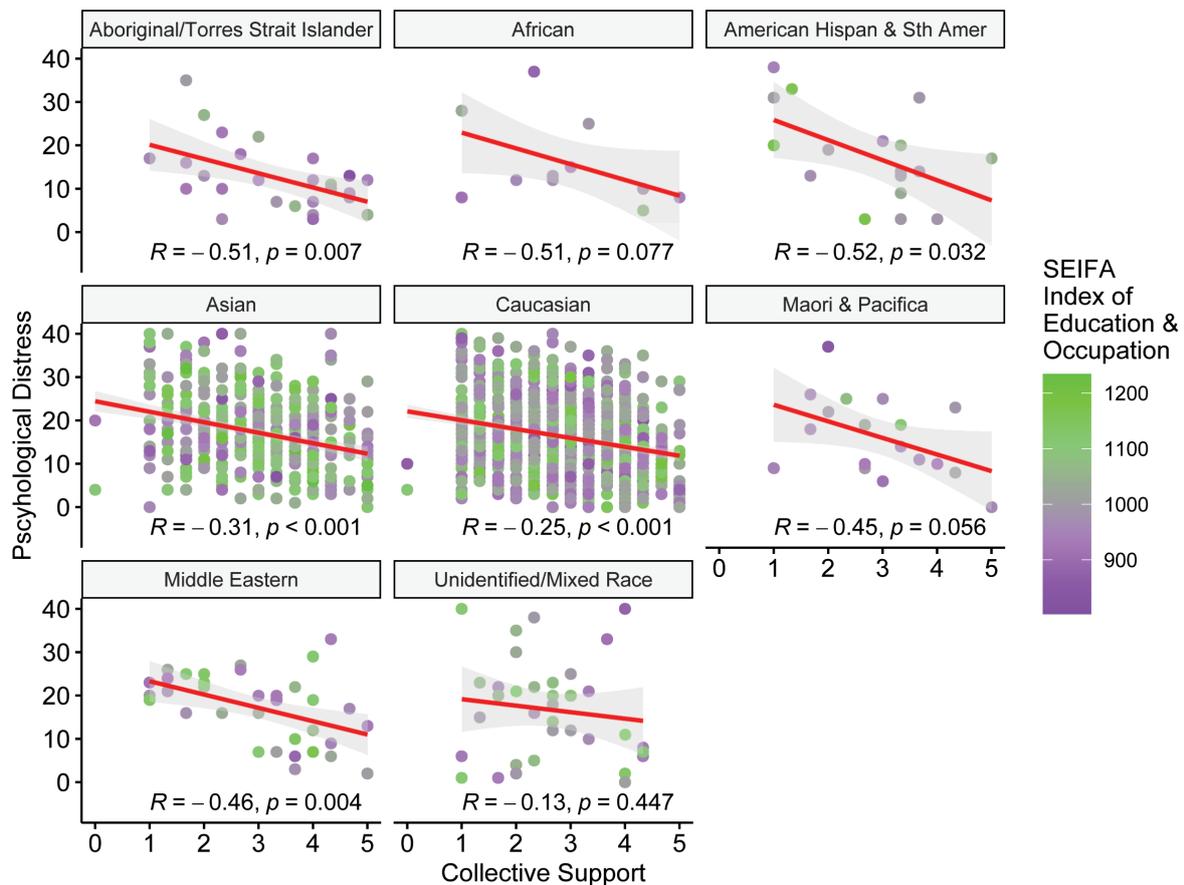
International students who had decided to stay and study in Australia found it very isolating and were angry about not receiving the experience they had expected, nor what they perceived they had paid for. Additionally, advisors may not have been equipped to handle the student complaints:

*It was a difficult time for me. I had no friends and relatives to support me emotionally and mentally. All the classes at the university were online. They affected my GPA. I paid for the on campus university experience and I am really disappointed in the way things went through... I am extremely depressed for not getting value for the money I paid to the university*

*I had no offline friend during the very first trimester and my program director had not supported me well, international student advisor was very rude*



**Figure 20. Scatterplot and Regression Line - Relation Between Institutional Support and Psychological Distress for Each Ethnicity**



**Figure 21. Scatterplot and Regression Line - Relation Between Collective Support and Psychological Distress for Each Ethnicity**

Many international students were also worried for their family members overseas as COVID-19 cases increased in the countries they were from:

*I'm an introvert so the change/adjusting to remote learning was minimal but the threat of the virus was stressful knowing cases in back home were rising and uncontrolled, and being far away from family members has heightened my anxiety levels and it did disrupt my sleep but I was able to focus on my studies. ... but was trying to manage my stress levels.*

Students from Aboriginal and Torres Strait Islander backgrounds reported lower levels of psychological distress compared to other students (see Figure 19). Higher levels of collective support were significantly associated with lower levels of psychological distress with student support centres playing a critical role in supporting and communicating with students:

*I was a mature age, Aboriginal student and got so much support, I really felt like I found my place. I loved my time at University*

*My established interpersonal relationships suffered because of COVID, especially interaction with Student Success Officers [SSO] in the ... Student study unit, [the Indigenous study centre] as a mature age student, who had previously never inspired to higher studies. I felt a little lost, when it came to asking questions and finding the information I needed concerning marks, grades and information on assignment submissions. I would usually ask the SSO. But, due to COVID the student study areas were closed and the SSO's were only available via phone or email. Communication from the school departmental heads, lecturers was excellent and kept me informed about the possibility of return to normal lessons.*

However, having children to care for and retaining the ability to study at university required university structures to be flexible and consistent across campus:

*Terrible. The Indigenous centre on campus wouldn't allow children on campus (but everywhere else would). I had to leave several subjects. Very depressing year.*

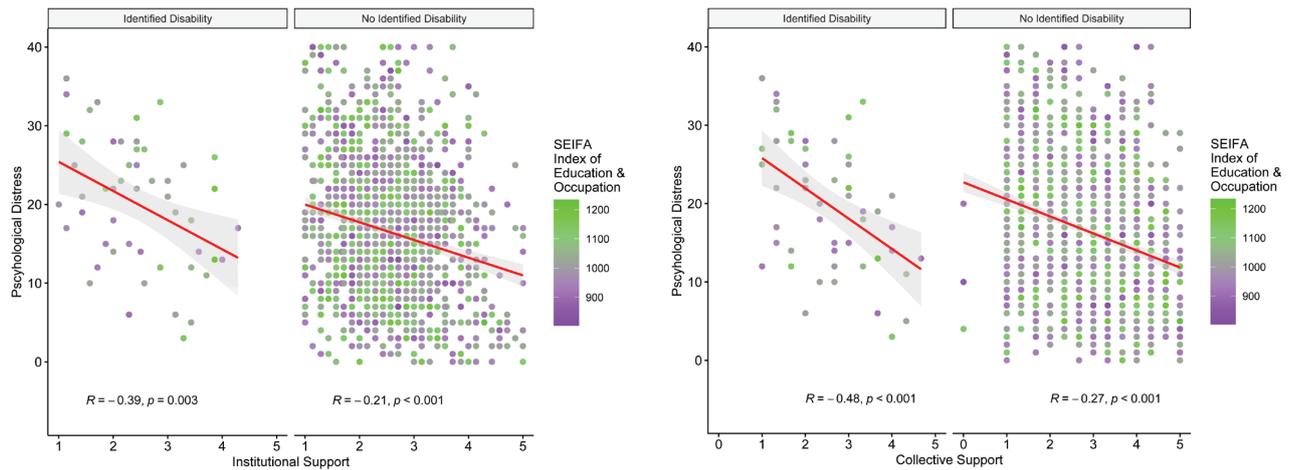
## Disability

Students were asked to identify if they had a disability. The mean for psychological distress for students with a disability ( $n = 54$ ) was 20.04 ( $SD = 8.05$ ) compared to the mean for psychological distress for students without a disability ( $n = 1374$ ) being 16.8 ( $SD = 8.78$ ). A one way ANOVA analysis indicated that students with an identified disability had, on average, a significantly higher score for psychological distress than for students not reporting a disability  $F(1, 1426) = 6.96, p < .01$ .

Examining the association between support (institutional and collective) and psychological distress (Table 5) shows 22 per cent of the variance in psychological distress was accounted for by the covariates and a combination of institutional support and collective support for students identifying with a disability. Figure 22 shows the scatterplots with linear regression lines for both categories with a 95 per cent shaded confidence interval around the regression line to show the associations for psychological distress on institutional (left side) and collective (right side) support (Figure 22). For students identifying with a disability the magnitude of effect was classified as large; on average, higher levels of collective support associated with lower levels of psychological distress.

**Table 5. Regression Coefficients of Institutional and Collective Support on Psychological Distress for Identified Disability**

Variable	No Identified Disability			Identified Disability		
	<i>B</i>	<i>SE B</i>	$\beta$	<i>B</i>	<i>SE B</i>	$\beta$
Institutional Support	-0.96	0.32	-0.09**	-2.64	1.61	-0.28
Collective Support	-1.88	0.24	-0.23***	-2.64	1.25	-0.33*
$R^2$ Adjusted		0.09			0.22	
<i>F</i> for Model (df)	(5, 1421)	29.64***		(5,48)	4.04**	



Note: Model 3 presented; Dependent Variable = Psychological Distress, Range = 0-40; \*p < .05. \*\*p < .01, \*\*\* p < .001; Covariates entered in Step 1 were gender, SES, rurality.

**Figure 22. Scatterplot and Regression Line - Relation Between Institutional (left side) and Collective Support and Psychological Distress for Identified Disability**

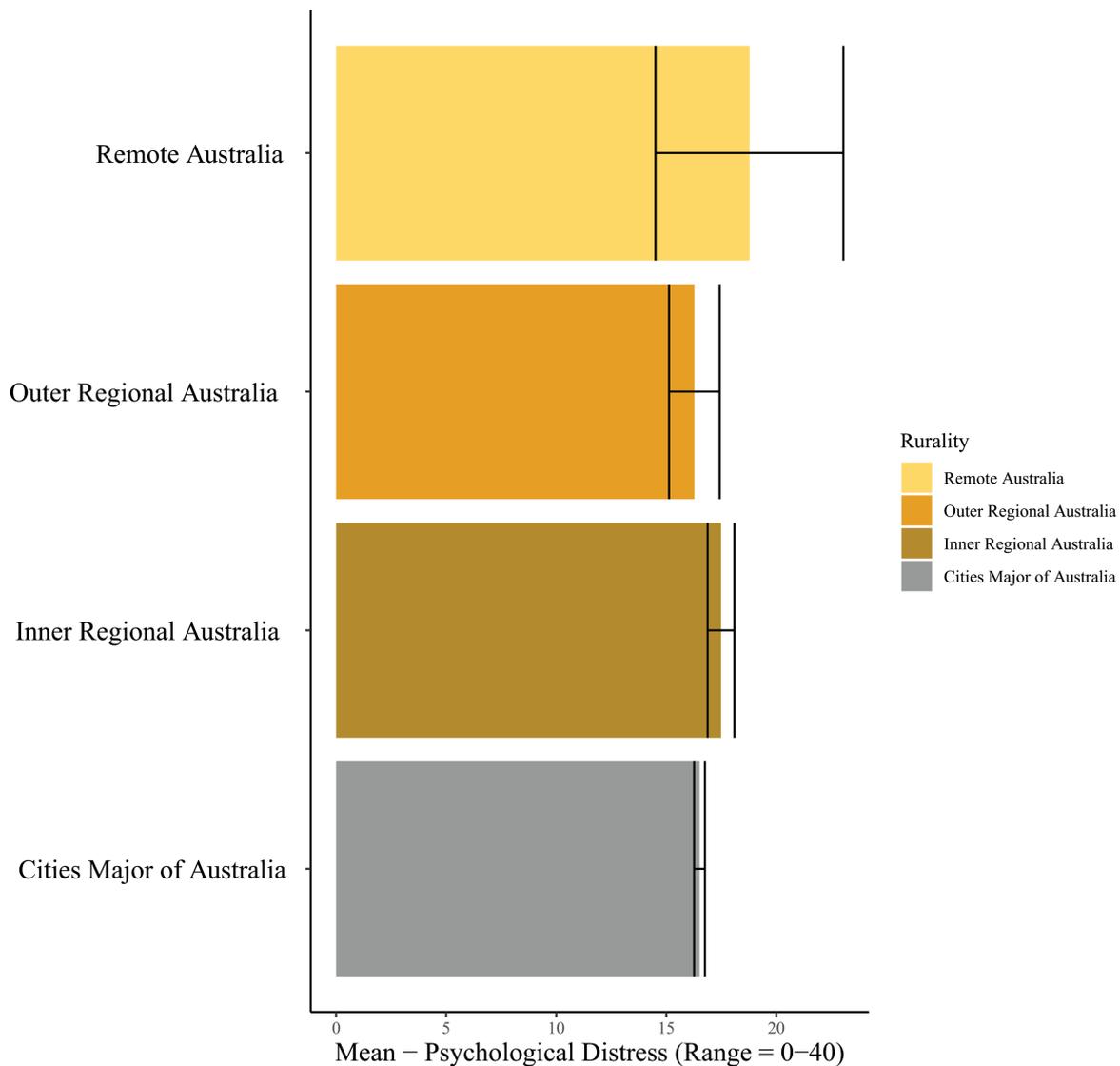
Students identifying with a disability appreciated the support given at a local level but still felt the inconsistency between messages given by higher levels of administration:

*It was a difficult year at University with so many changes occurring in a short period of time. The consistent check-ins with University support from Counselling and Disability services was worthwhile and meaningful in maintaining a will to attend and maintain my university studies. I think what was missing was the level of communication and its consistency between senior management and the students of the university. It felt as though people were not listening to the wants and needs of students at times during this period of time*

## Rurality

Students were asked for their residential postcode to determine their degree of rurality. If they didn't indicate a postcode, the postcode of the main campus was used in the analysis. This occurred for less than 5 per cent of the students. The means for psychological distress for each category of rurality are shown in Figure 23. To determine if there were group differences, an ANOVA was performed, indicating no significant differences between the mean psychological distress scores for the rurality groups,  $F(3, 1424) = 0.86, p = .46$ .

Examining the association between support (institutional and collective) and psychological distress (Table 6) shows 10 per cent of the variance in psychological distress was accounted for by the covariates and combination of institutional support and collective support for students from major cities in Australia. Figures 24 and 25 show the scatterplots with linear regression lines for all categories with 95 per cent shaded confidence interval around the regression line to show the associations for psychological distress on institutional support (Figure 24) and collective support (Figure 25). For students living in the outer regions of Australia the magnitude of effect was classified as moderate; on average, higher levels of collective support associated with lower levels of psychological distress and on average, higher levels of institutional support associated with lower levels of psychological distress, however the magnitude of effect was small to moderate.



Note: K10 categories for psychological distress are (ABS, 2007; Sunderland et al., 2011); under 5 (none to low distress), 6 to 11 (moderate distress), between 12 and 19 (high distress), 20 or above (very high distress).

**Figure 23. Means (standard error bars) for Psychological Distress (K10) for Rurality in Australia**

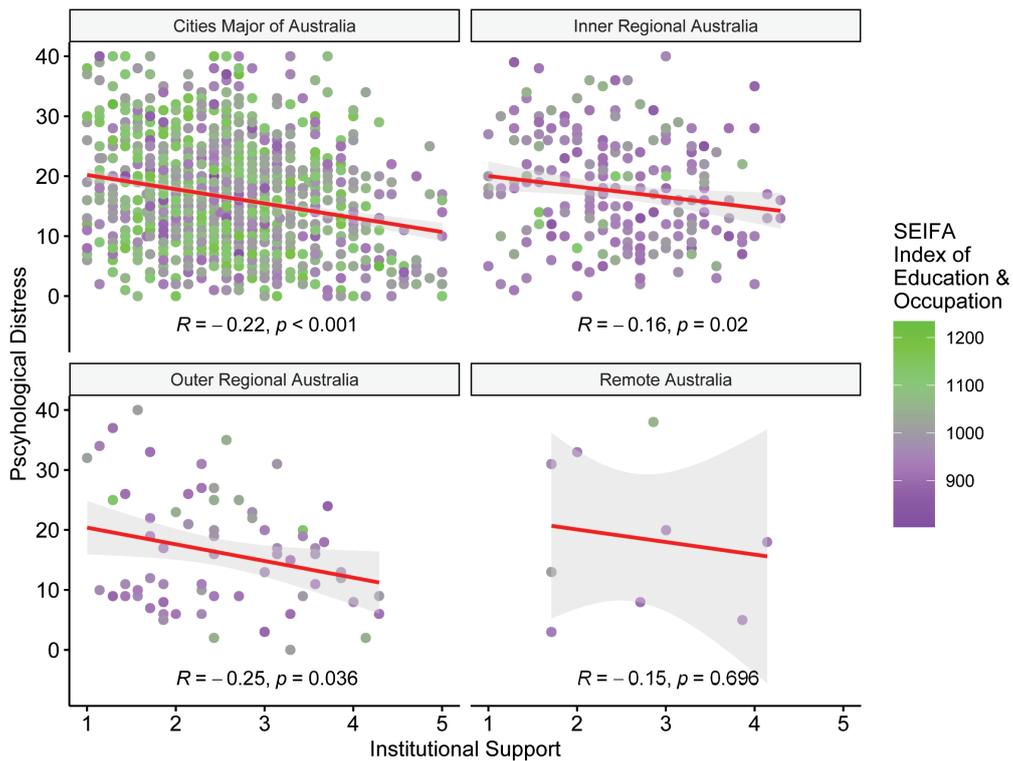
Living remotely, and having the university campus in lockdown compounded problems for travelling from remote regions to complete study and participate in graduation milestone celebrations:

*I was not able to attend the graduation ceremony for my Master in Public Health. I was living in a remote Indigenous community and although I could leave I would then not be able to return which meant I couldn't leave as I was working there. Keeping the borders open will impact on my capacity to attend the residential in March 2021. The internet access in the remote community was very variable and unreliable which made study more difficult.*

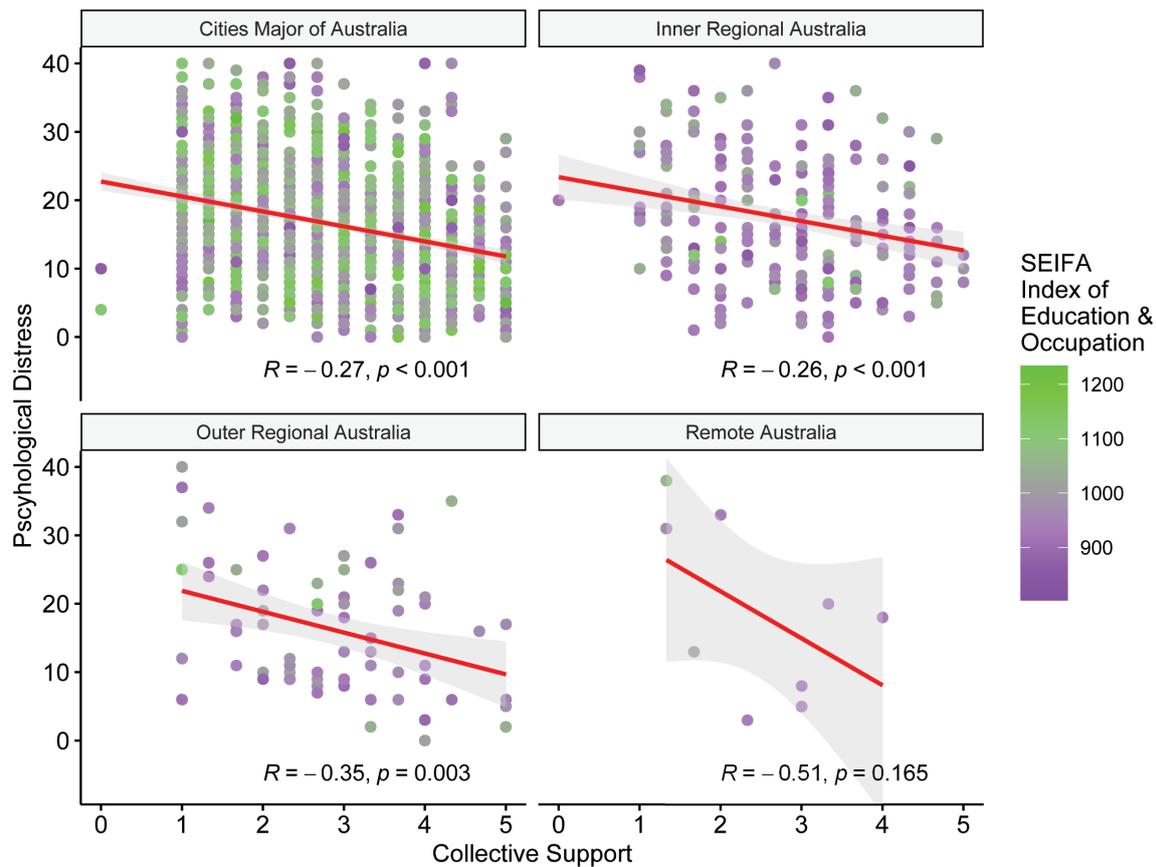
**Table 6. Regression Coefficients of Institutional and Collective Support on Psychological Distress for Degree of Rurality**

Variable	Major Cities			Inner Regional		
	<i>B</i>	<i>SE B</i>	$\beta$	<i>B</i>	<i>SE B</i>	$\beta$
Institutional Support	-1.10	0.34	-0.10**	-0.35	0.91	-0.03
Collective Support	-1.84	0.26	-0.23***	-1.91	0.69	-0.23**
<i>R</i> <sup>2</sup> Adjusted		0.10			0.04	
<i>F</i> for Model (df)	(5, 1186)	28.42***		(5, 205)	2.94*	
Outer Regional						
Variable	<i>B</i>	<i>SE B</i>	$\beta$			
Institutional Support	-1.78	1.36	-0.16			
Collective Support	-2.63	1.07	-0.30*			
<i>R</i> <sup>2</sup> Adjusted		0.09				
<i>F</i> for Model (df)	(5, 63)	2.28				

Note: Model 3 presented; Dependent Variable = Psychological Distress, Range = 0-40; \**p* < .05. \*\**p* < .01, \*\*\* *p* < .001; Covariates entered in Step 1 were gender, SES, identified disability; Non-significance for Remote and no students came from the Very Remote areas of Australia



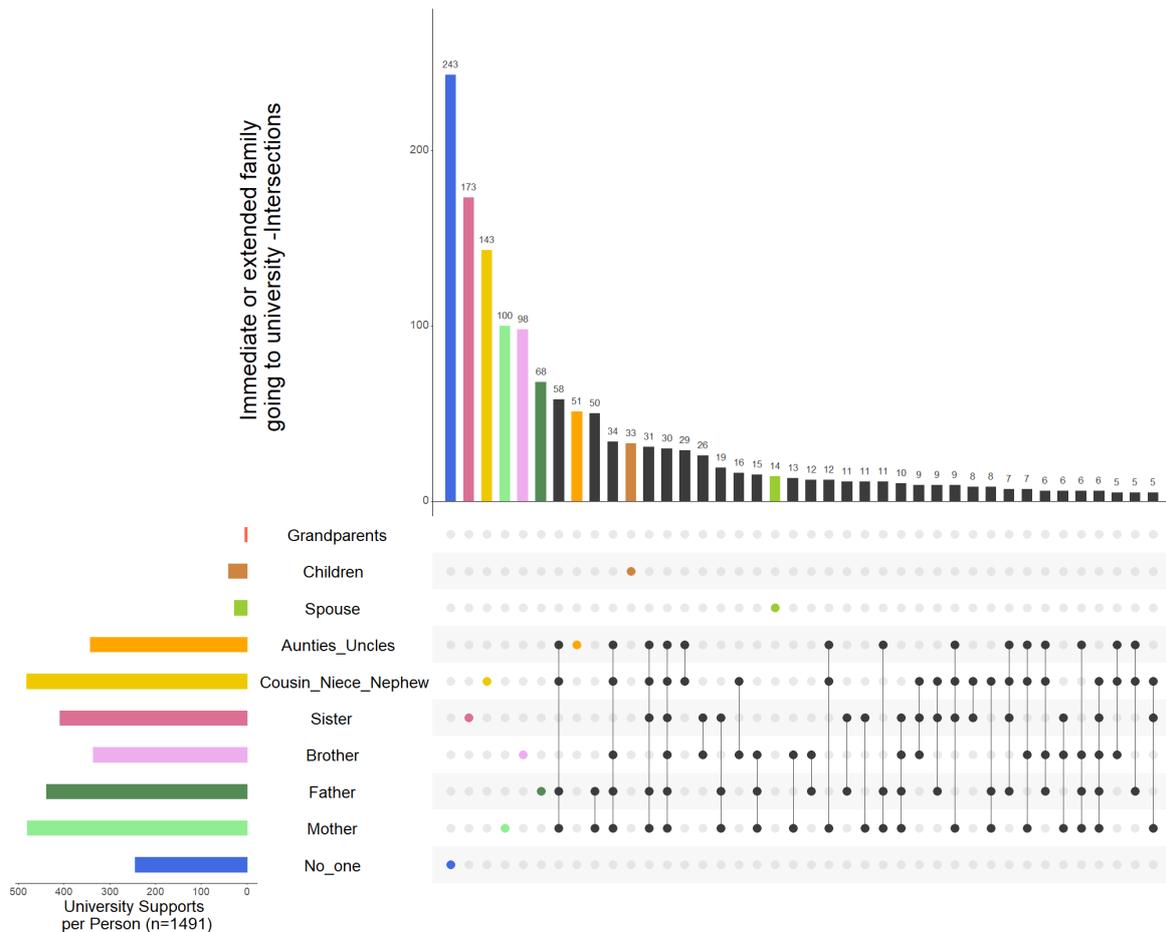
**Figure 24. Scatterplot and Regression Line - Relation Between Institutional Support and Psychological Distress for Degree of Rurality**



**Figure 25. Scatterplot and Regression Line - Relation Between Collective Support and Psychological Distress for Degree of Rurality**

### First-in-Family status

Students were asked to identify if they had a relative known to them who had attended university. Approximately 16 per cent of participants were first-in-family or the first generation to attend university (see Figure 26). Around 46 per cent of the participants had one other form of relation (e.g., mother or father or sister or brother etc.) who went to university. To determine if there were group differences, an ANOVA was performed, indicating no significant differences between the mean psychological distress scores for the students who were first-in-family and those who were not  $F(1, 1485) = 0.06, p = .81$ .

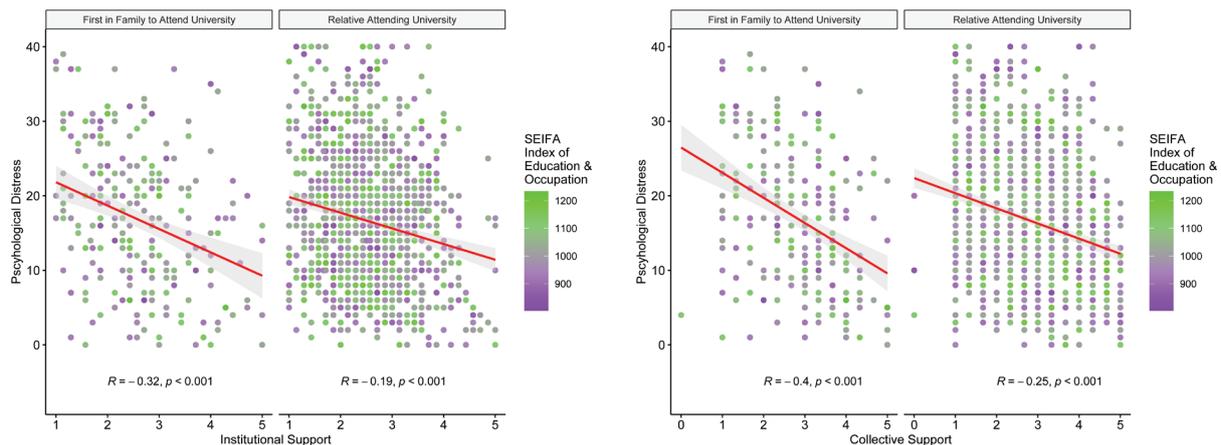


**Figure 26. First-in-family Status with Intersections of Close Family Members Known by the Participant to have Attended University**

Examining the association between support (institutional and collective) and psychological distress (Table 7) shows, 18 per cent of the variance in psychological distress was accounted for by the combination of institutional support and collective support for students who had no known relative attend university. Figure 27 shows the scatter plots with linear regression lines for both categories with a 95 per cent shaded confidence interval around the regression line to show the associations for psychological distress on institutional (left side) and collective (right side) support (Figure 27). For both support cultures, the relation between collective support and psychological distress was significant and the strongest for first-in-family students reporting, on average, higher levels of institutional support and higher levels of collective support associating with lower levels of psychological distress, with a medium to large effect size.

**Table 7. Regression Coefficients of Institutional and Collective Support on Psychological Distress for First-in-Family at University**

Variable	Relative known to attend university			First-in-Family - no known relative		
	B	SE B	$\beta$	B	SE B	$\beta$
Institutional Support	-0.92	0.35	-0.09**	-1.03	0.69	-0.11
Collective Support	-1.71	0.26	-0.21***	-3.10	0.61	-0.36***
$R^2$ Adjusted		0.08			0.19	
F for Model (df)	(6, 1232)	19.07***		(6,235)	10.29***	



Note: Model 3 presented; Dependent Variable = Psychological Distress, Range = 0-40; \* $p < .05$ . \*\* $p < .01$ , \*\*\*  $p < .001$ ; Covariates entered in Step 1 were gender, SES, identified disability, rurality.

**Figure 27. Scatterplot and Regression Line - Relation Between Institutional (left side) and Collective Support and Psychological Distress for First-in-Family to attend university.**

## Student Profiles

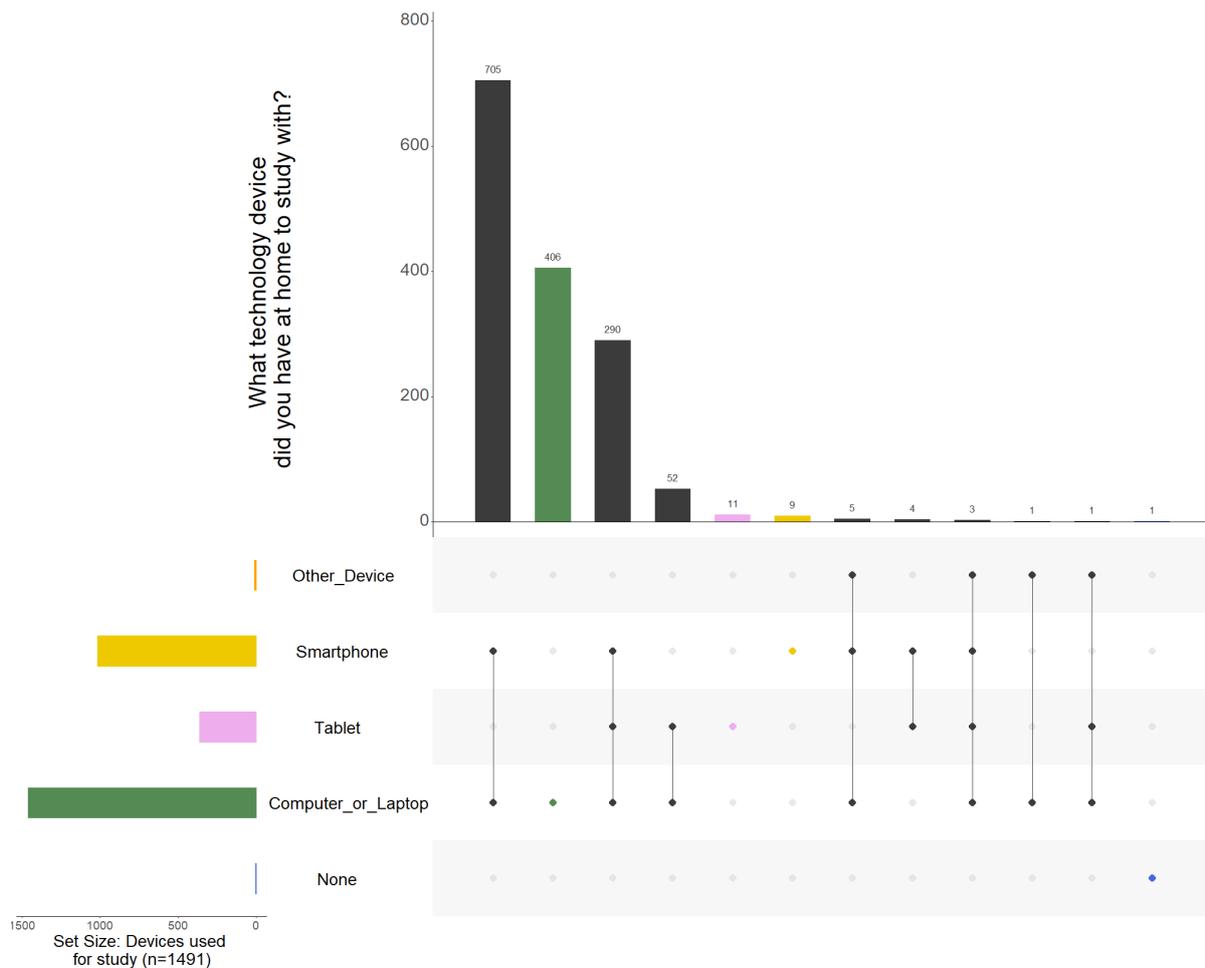
See Appendix 2 for results related to the profiles of the students: fields of education, level of study, states of Australia, and mode of residence. Although there are some differences depending on the area of profile examined (see appendix 2), mainly on average, two out of three students were experiencing high to very high levels of stress no matter what field they were studying, the level of study, mode of residence or state of Australia. If levels of collective and institutional support were, on average, high, then their psychological stress levels were, on average, lower.

## Technology support

The structural changes to learning due to the COVID-19 pandemic meant that university students were required to complete their studies by engaging with the curriculum within an online platform; critical to the success of this transition was the requirement for students to be able to access, afford and use digital devices. Examining the Australian Digital Inclusion Index (ADII), which annually measures three dimensions of digital inclusion: access, affordability, and digital ability, helps to determine the levels of differential digital inclusion for students (Thomas et al., 2020).

Although digital inclusion is increasing within Australia, a digital divide exists, especially for students from rural and low SES backgrounds (Thomas et al., 2020). Students who live in households with the lowest income levels are 30 points lower on the ADII than those with the highest income levels (Thomas et al., 2020). Students living in rural areas are 7.6 points lower on the ADII than their city counterparts (Thomas et al., 2020).

What was crucial for studying online was accessing the internet to join in real-time tutorial sessions to connect with other students and lecturers or tutors. Pre-COVID, on average, 13.2 per cent of households **did not** have internet, and students, mostly from low SES backgrounds (Drane et al., 2020; see <https://datawrapper.dwcdn.net/CHx4K/3/> for a map of Australia showing the per cent of the population without the internet) who resided in these households would, pre-COVID, have visited the university campus to access technology and the internet. However, these services were no longer available during the lockdowns from COVID-19, so universities often supported students with loans of digital devices or paid for internet connections. The devices students used for studying and how they accessed technology are shown in Figures 28 and 29.



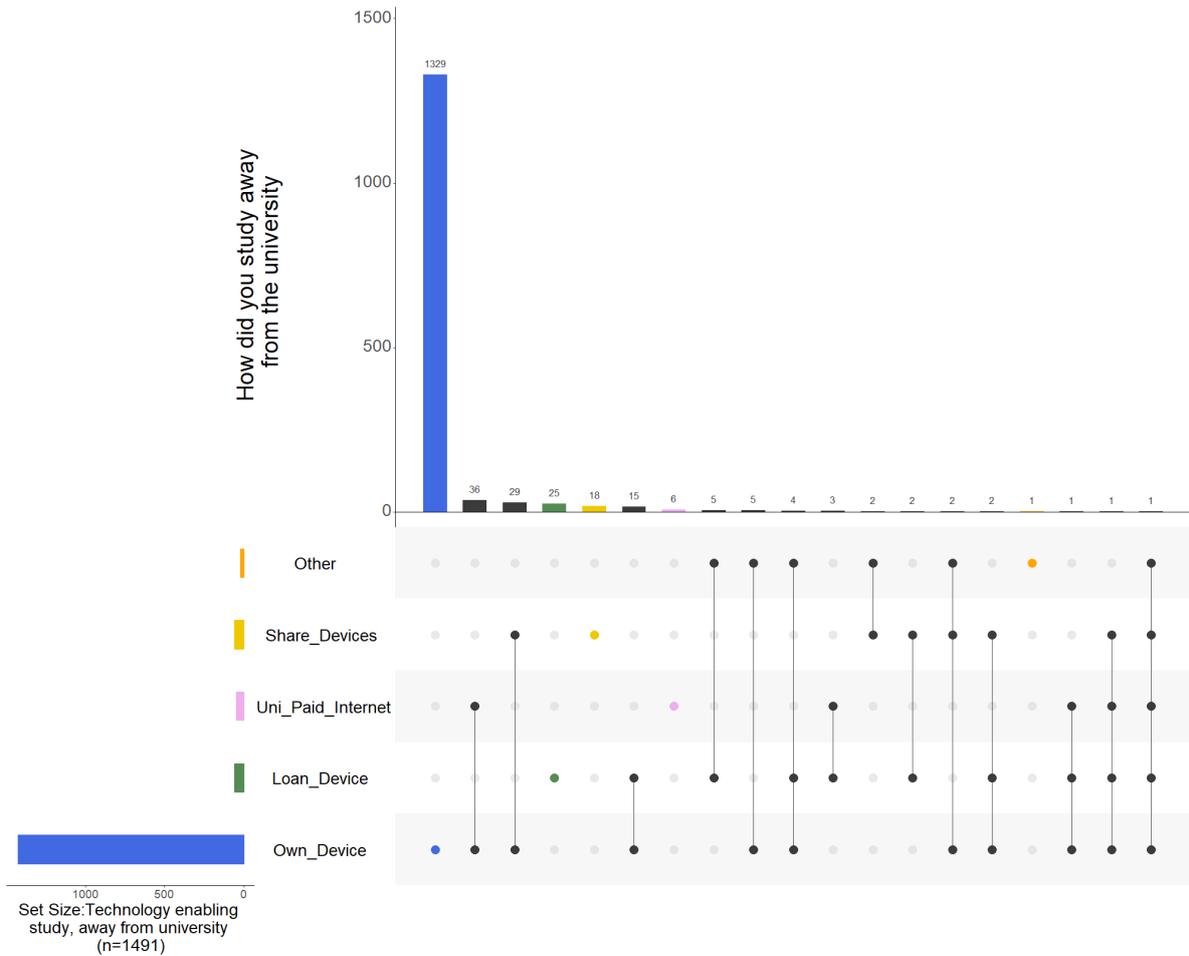
**Figure 28. Technology Devices Used for Studying at University**

Students expressed frustration with their poor internet connections at home and this interfered with their ability to study:

*It was extremely hard to stay focussed on any task. I found myself going to the campus library as a way to leave my house and study in a quiet space, with minimal distractions. My wifi at home continually dropped out during my online tutorials and Zoom would kick me out. This was extremely disruptive to my learning.*

Some regional and remote students had limited access to any internet and had to travel long distances to access the internet to listen to their lectures. This caused frustration especially when students could envisage an easy alternative, that is sending out the lectures on a USB via the postal system:

*Once COVID-19 hit I moved up to far North Queensland to go back to full time work while I was doing full time study. We had no wifi and limited phone service so once a week I would drive 75km to the nearest town to watch uni lectures and get information about my assessments. They needed to have more options for people who couldn't come to the zoom lectures and didn't have internet to watch them like send out USB with all of the recordings. Doing the exams online worked well and it would be great if they could stay that way.*



**Figure 29. Method for Accessing Technology and the Internet for Studying**

Students had to loan devices to complete their studies and were appreciative of the flexibility around administrative procedures to make sure they were equipped to study and complete their assessments:

*I still received my scholarship (a lot earlier) and was able to buy my laptop in good time before COVID 19 really hit, before that for a few weeks I was loaning a laptop from the library. Juggling my children’s homeschooling and me being on [internet] lines was challenging at times, but our teachers gave us extra time to hand in assignments and complete our online tests/exams.*

## Discussion

The current study contributes to a needed research arena focused on university student mental health. Drawing on data from more than 1,400 students across the country and leveraging both quantitative and qualitative self-reports, study findings reflect the diversity of students who carry with them a variety of strengths accessed through the support structures around them and from their lived experience.

In relation to the specific objectives of the project, it was found that:

1. The prevalence of psychological distress among university students across Australia in 2020 was high (32%) to very high (39%).

This finding that over two-thirds of students experienced high levels of distress is consistent with other studies that have reported the negative impacts of COVID-19 on the wellbeing of university students both in Australia and globally (Ala'a et al., 2020; Cao et al., 2020; Dodd et al., 2021; Xiong et al., 2020). The levels of psychological distress, on average, were higher (71%) than for students surveyed pre-COVID, where levels were at 17 per cent (Cvetkovski et al., 2012). Comparative research of university students in Jordan surveyed using the K10 found 69 per cent of the students had very high distress (Ala'a et al., 2020).

2. Students identifying as belonging to an equity-based group were vulnerable to high levels of psychological distress (students from low SES backgrounds, rural and regional students, international students, students who identify as having a disability), as well as students who identified as first-in-family. These groups of students experienced high levels of psychological distress, which were, on average, not different to the general population of students, except for students identifying with a disability.

Students who identified as having a disability experienced, on average, very high levels of psychological distress compared to students who didn't identify with a disability. People identifying with a disability have been recognised by governments across Australia as a particularly vulnerable population to poor health and were one of the first groups of people to receive the COVID-19 vaccine (Yates et al., 2021). For students who identify with a disability, worrying about physical health alongside all the other disruptions related to COVID-19 exacerbates their mental health (Minotti et al., 2021).

The student's level of SES did not associate with psychological distress for the students who were surveyed. Although the students came from all levels of SES, it would seem that, on average, students, no matter their level of SES, experienced high levels of psychological distress. The disruptions of 2020 were felt by all students and their distress was related to the broad structural, social and environmental disturbances that resulted from the pandemic (Kyne & Thompson, 2020; Universities Australia, 2020a).

3. Students who experienced high levels of institutional support and collective support experienced lower levels of psychological distress.

Study findings from the quantitative data demonstrated that there were strong associations between the support provided by the university as an institution and psychological distress. For every category of diversity (e.g., first-in-family, regional students, students who identified with a disability, ethnicity and gender), when students' responses to survey questions were analysed the overall effect was that on average, students with higher levels of institutional support reported lower levels of psychological distress. Institutional support was identified as having someone from the university reaching out; examples include having the senior leadership teams (the Vice-Chancellor to the Deans) communicate with students, having lecturers reach out with emails, having tutors ask about how they are going in online sessions, having members of the student guild or academic peers in their tutorials taking an

interest in how they are going. All these support areas were related directly to the structures and processes in a university setting and could foster wellbeing if accessed.

Results from the qualitative data provided explanations for why levels of psychological distress were lower when institutional support was high. Students commented that when the messaging was consistent and authentic through the levels of leadership, students felt supported. Students identified that when the university leadership teams were not authentic in their approach and that communication from senior management through to the subject coordinators was inconsistent, they felt confused and angry, which contributed to higher psychological distress. Students noted that sometimes messages that came through the university hierarchy were presented ad hoc (sometimes an abundance of emails with differing messages, sometimes one Facebook notice) and were not consistent across the university. Some students identified that some subjects provided support and acknowledged their mental health. In contrast, the procedures in another subject, sometimes in the same university faculty, had different approaches and expectations, were not flexible and did not acknowledge the stress the students were experiencing.

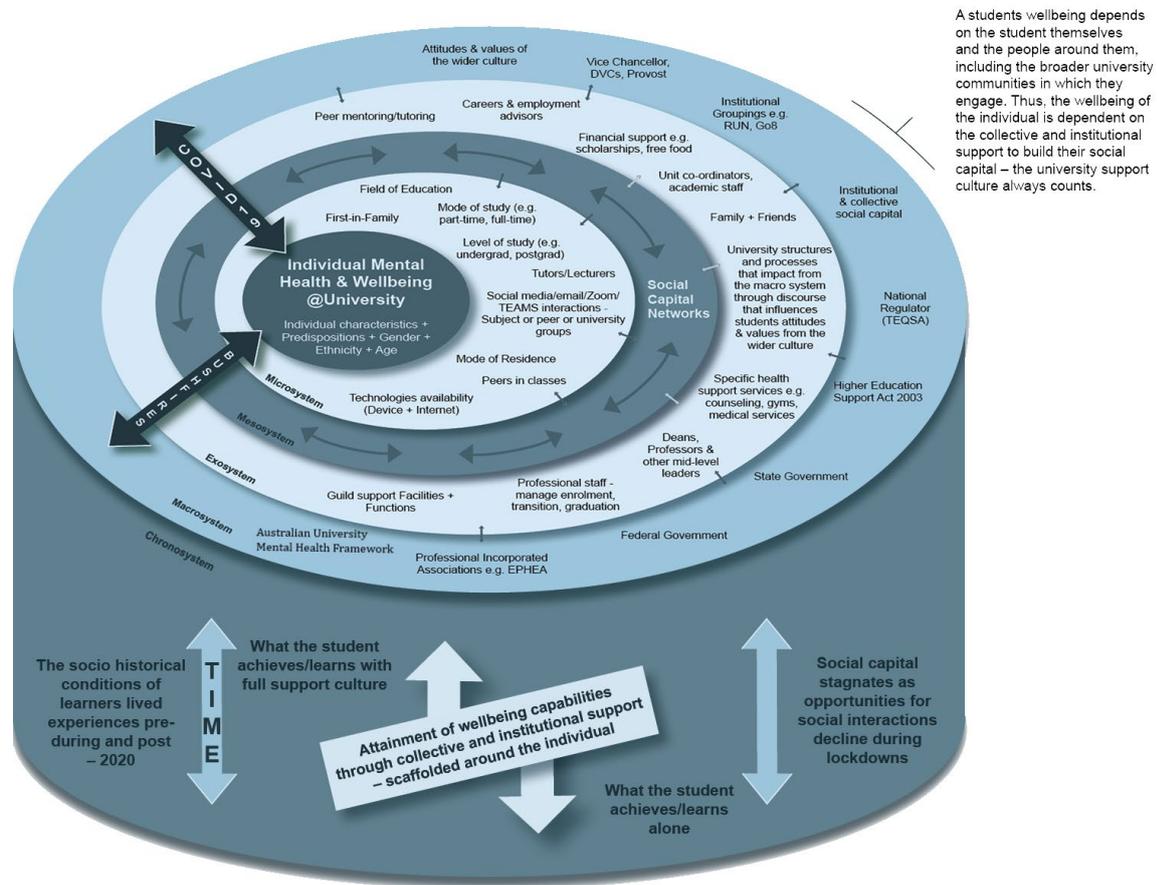
Evidence was found that the collective support, that is the direct support and daily contact with peers in their immediate surroundings (e.g., tutors at a subject level, friends at university, family that may or may not have been to university) provided conditions to mitigate the effects of psychological distress through the tangible structures and processes which students perceive as prioritising their mental health. In these close proximity settings, if the university can provide students with access to the resources that facilitate social interactions, collective support can translate to feelings of belonging and connection to others that students perceive as others caring about their wellbeing. Notably, if universities limit or withdraw the settings that foster social interactions, the student feels unsupported by their community, with depleted social capabilities. Ultimately, as shown through the qualitative findings, higher levels of stress leave students struggling to navigate the university environment, struggling to perform academically and struggling to complete their academic studies. Students also pondered whether to continue at university.

## Conceptual Model

Adopting a broad, ecologically-based lens that acknowledges that mental health can be examined in terms of a 'capabilities approach' (Sen 1992), alongside notions of social and navigational capital (Bourdieu & Passeron, 1977; Yosso 2005), this study is able to show in practical terms where the student is centred and is impacted upon across the whole of universities structures and processes. In particular, these structures and processes were theorised as potentially acting as inhibitors, catalysts, or accelerants of optimal wellbeing. Therefore, mapping onto Bronfenbrenner's bioecological model (Bronfenbrenner & Morris, 2006) has helped to better envision how the influences from disruptions of COVID and bushfires have permeated across all the nested levels, impacting upon government and institutional systems, university systems, subject structures and processes, down to the way technology was used and classes/tutorials were conducted. These structures and processes either foster or inhibit the development of mental health. In this current study, we found this permeation and interaction of systems indeed influenced where students were positioned on the continuum of wellbeing. This mapping presents a conceptual model (Figure 30) based on Bronfenbrenner's bioecological model (Bronfenbrenner & Morris, 2006) to show how interactions between multiple processes and structures transcend from the individual level to the distal levels of influence that can guide future university mental health research.

Not surprisingly, during 2020, the COVID-19 pandemic lockdowns in particular, resulted in the loss of many of the indicators of social capital (see Figure 30). This included the important capital associated with face-to-face interactions, which contribute to numerous positive relationships including with academic peers and family and friends. Here, Bourdieu and colleagues' (1977) perspectives can be considered in relation to times of disruption by

suggesting that if universities can pivot to understand the complexities of their organisations and provide the necessary factors, they can influence the subsequent development of capabilities, especially around wellbeing.



**Figure 30. Conceptual framework of the relationships between the proximal processes in the microsystem and the distal processes in the macrosystem that drive mental health development**

Using the conceptual model in the context of the COVID-19 pandemic, universities can examine the presence or absence of capabilities, often dependent upon different fields of education [study], tutorials, technology use, or even the type of university. Using the conceptual model and placing a first-in-family student at the centre, we can determine why their psychological distress is higher than their peers. For example, a first-in-family student learns how to navigate university by observing how their peers (who are not first-in-family and possess knowledge from people who have already been to university; King et al., 2015) interact with their tutors, lecturers and university systems. However, during COVID, when classes went online, this opportunity to interact with their peers was withdrawn, so, as the social interactions from which they were learning disappeared from view, there were no contributions to the first-in-family student’s social and navigational capital. Students who experienced this loss reported feeling alone and isolated.

What the student observed and what they felt, whether their needs were met or not, all looped back into their new reality. Furthermore, the degree to which the university governance is “informed by their students' needs, perspectives and the reality of their experiences” (see AUMHF, Orygen, 2020a, p. 4, Principle One) determines how flexible the university’s approach is to develop a supportive culture, around mental health and wellbeing. Thus, the individual student's wellbeing depends on the collective and institutional support

that the university can deliver and from which students can access in their microsystem to build their social and navigational capital (see Figure 30).

Mapping onto the conceptual model we can see that influences from outside the university can also influence the institutional systems of the university (at the macrosystem level). No matter how they develop, enacting the policies and procedures involves the permeation and dynamic interactions from the macrosystem through to the student's microsystem. The interpretation of the policy and implementation in practice at the level of the microsystem can not only influence the way students learn but also their mental health. Many of these endorsed policies and procedures may be protective of the mental health of students. However, some may pose a risk to students' mental health. In practical terms, policy changes can be particularly harmful to a student's mental health if the policies change their conditions of study and the institution doesn't seek or ignores feedback on their impact. For example, students indicated that they received little help to transition online and communication was inconsistent and not authentic.

If the institution has consistent, authentic responses to disruption and the changes to established known systems are clearly communicated from the senior management (in the macrosystem) through to students (in the microsystem), including a process where the institution seeks feedback then student clarity of system wide processes will facilitate their study as well as support their mental health. This feedback loop from the student back to management may then be perceived as efficacious to student mental health (see AUMHF, Orygen, 2020a, Principle Four).

### **How can universities collect information about student mental health?**

If students take the time to complete the online unit evaluations, then these student experience surveys can be a constant source of information that university governance can use to shape the policies and procedures of the university (Darwin, 2021). However, they will need to contain questions about students' mental health. This regularly collected information on the student's experience also needs to be interpreted through the lens of the student's position on the mental health continuum to address what the student needs and the reality of their experiences. This shift in the analysis would enable institutions to strengthen their responses to mental health and wellbeing through "collaboration and coordinated actions" (see AUMHF, Orygen, 2020a, Principle Four, p.4).

Similarly, the student experience surveys could be used to examine students' sense of belonging and if peer support services are providing the required level of support. Our research findings indicate that high levels of collective support are perceived by the student as an inclusive environment, where they feel connected to their peers and feel like they belong at the university. The flow-on effect is that they experience positive mental health (see AUMHF, Orygen, 2020a, Principle Three).

This study also found that access to technology resources were vital for continued, stress-free study. The lack of technological devices such as a laptop and good internet made completing online study almost impossible, especially for those in regional and remote areas. Students' felt a general lack of understanding from the university that they may have poor internet connections, were sharing devices and/or bandwidth, meaning that access at scheduled classes could be problematic. Students' commented that they had to drive many kilometres from their place of study to an internet access point or they drove to the campus and sat outside to access the internet. Students from universities that asked about their technology access and, if problematic, supported them by supplying devices through loans and/or internet help, were less anxious than students who were left to find their own technology equipment. Managing technology and the online environment contributed to increased levels of psychological distress for some students.

Furthermore, when institutions ensured services from the exosystem could step-in and reach out to individualise the student experience, students reported feeling supported and as if they belonged to the university community. University management is often far removed from the individual student (out in the macrosystem), so they need to ensure that there is consistency and authenticity as messages filter through the nested layers of systems to the student. University management must ensure that their strategies and processes support and build the structures in the inner layers of influence for students, supporting students to flourish at university. Students noted that when cost-cutting measures removed several tutors from a subject area leaving only the course coordinator to manage the unit of study, not only did the students feel stressed because of the withdrawal of tutor care and communication, they also picked up on the stress from the course coordinator resulting, for them, in further stress.

For positive mental health, formal scaffolding structures and processes to increase connectedness, relationships (social capital) will be essential within the proximal environment of the student (Crawford, 2021; Hazell et al., 2020). When used effectively, relationship building with tutors/lecturers and classroom peers, proximal support processes may reduce the negative feelings reported by students. Collective support may help prevent students from becoming frustrated and discouraged within their immediate environments, especially as they risk becoming increasingly more isolated due to continued online learning.

Students expressed the view that they required their university (leadership teams) to better prepare their institution to deal with similar disruptions in the future. Students expressed that although, in the short term, their institution was able to cope with the lockdowns and pivot to online learning, the disruptions could be seen as an opportunity for the institution to set in motion plans and strategies for future crisis management so universities can be seen as resilient and agile organisations to cater for their students' mental health needs. Indeed, there were many aspects of studying online that students found helpful, like increased flexibility around lecture times, and students didn't want to lose the 'good bits' when normality returned. Overwhelmingly important for students was consistency and authenticity, as students found variability in management and processes across their studies and within their university structures most stressful.

Indeed, the local context of the university (different effects of COVID and bushfires dependent on the state you resided in during 2020, the rurality of the university, and the underlying institutional grouping, e.g. Go8), was seen to play a role in determining how the university planned and implemented strategies to promote wellbeing and implement mental ill-health support services for their students. However, the different approaches between universities and even more problematic for the students were the variability of processes between units of study or across campuses within their university. This calls to universities to develop their strategic plans uniformly under the guidance provided by The Framework (Orygen, 2020a). A unified adoption of a standardised data collection method across all universities, not just reporting on presentations to counselling services, would go a long way to developing and implementing targeted, evidence-based programs to meet all students' mental health needs.

Repercussions from the pandemic of 2020 see a continuation of online learning with the loss of face-to-face interactions. For universities, either *fostering or withdrawing* institutional and collective support resulted in two very different experiences for students, which impacted their psychological distress. Some students found that their universities did an excellent job of transitioning and handling the disruptions, making sure they felt welcomed and supported (Arslan et al., 2020). While others thought there was a lack of consistency when it came to teaching approaches. The students felt the universities were cutting costs and not supporting their academic study, increasing their stress levels.

The increased levels of psychological distress for current and future university students will remain long after the economy recovers, the borders reopen, and we learn to live with the COVID-19 virus. For those students affected by the bushfires of 2020, the impact still lingers due to communities' physical devastation, which has negatively impacted students' wellbeing. With such high levels of psychological distress for students across Australian universities, including for equity and diverse student groups, universities must address what can be done to optimise students' wellbeing. The findings of this research emphasise the importance of universities implementing a whole-of university approach focusing on prevention through institutional and collective support with the student at the centre of a planned strategy and resources readily available in their immediate environment to foster positive mental health development.

## Conclusion

A student's wellbeing depends on the student themselves as well as the people around them and the environment they interact with, including the broader university systems in which they engage. Furthermore, we cannot ignore the pressure generated from the global pandemic that have permeated across all levels of governance, challenging both institutional and collective support mechanisms that would usually surround students. For students of 2020, COVID-19 and other disruptive events have impacted the reality of their student experience, and COVID-19 continues to challenge our university community's mental health.

Disruption has impacted government and institutional systems, university systems, course and subject structures and processes (including lectures, tutorials, laboratories, and practica), the way assessments were conducted, all the way down to how technology was used and content delivered. This disruption has resulted in a higher prevalence of psychological distress for students at university. Counselling services alone will not be enough to address the rising number of students at risk of poor mental health. Our research finds that the way the university responded to disruption impacted upon student psychological distress. Students who felt supported by their institution and by the people around them experienced higher levels of wellbeing.

As the community adapts to the changed conditions of living with COVID-19 and these high levels of psychological distress continue through the next few years, it elicits the question of **what are universities going to do over the next few years to monitor the levels of psychological distress and adapt their approaches to enhance student wellbeing?** Indeed, early identification of widespread prevalence or particular groups at risk enables the development of targeted programs to prevent the escalation of poor mental health. Equally, knowing the prevalence and determinants of positive mental health also "helps build an understanding of what works for student mental health and wellbeing" (see AUMHF, Orygen, 2020a, p.4, Principle Six).

The increased levels of psychological distress for current and future university students will continue, even after the community learns to *live with* COVID. The release of the Australian University Mental Health Framework (Orygen, 2020a) coincided with the immense challenges of 2020 and has brought mental health to the forefront of national concern and university governance.

With such high rates of psychological distress in the university student population, the findings of this research emphasise the importance of universities monitoring their whole-of-university approach. This study illustrates a way to measure prevalence and to map processes and structures; however, it is limited by the relatively small sample size compared to the numbers of university students nationwide. The findings must also be interpreted in relation to the over-representation of females and students studying in the health field of education. Lastly, the study has collected cross-sectional data at the one-time point, and further research would benefit from studying psychological distress over time as well as changes over time in cultural and institutional support.

We acknowledge that these findings provide a snapshot of the student experience for 2020, and long term monitoring of student mental health and wellbeing needs to occur. Further research related to the challenges for university staff is also required, such as approaching the senior executive team, lecturers, tutors and support services in universities to explore their experiences and understandings of students' mental health and wellbeing. However, as noted in The Framework, a strength of this study is in taking the first step to collect accurate data on the prevalence of psychological distress for students in Australian universities. Furthermore, to map the university processes and structures that support student wellbeing.

## Recommendations

Therefore, based on the findings from this research, it was recommended that:

1. To understand the prevalence of mental health across the university student population, we advocate for universities across Australia to implement a data collection method using a population screening tool (like the K10). The university will then be able to identify, broadly and at the diverse group level, areas of positive mental health and areas of emerging mental health risk. Knowing the extent of wellbeing within the student population will enable the development, access and maintenance of targeted structures and processes to support students' mental health and wellbeing.
2. To understand the reality of the student's experience, additional questions tapping into a sense of belonging and connectedness can be added to the student evaluation surveys to ascertain how students feel about their university collective support culture. Knowing the degree to which students feel belonging and connectedness associates with student wellbeing and informs university governance about the overall support culture of their university
3. To understand the efficacy of the proximal processes and structures directly accessible to the student in their day-to-day activities and of the distal processes and systems that influence policy and procedures, the university can use the conceptual model (Figure 30) to map and assess the effectiveness of their institutional support culture for student mental health. Notably, the focus of this mapping is to audit the consistency and authenticity of processes and procedures across all nested levels of university governance. Additionally, the mapping will enable the university to monitor these dynamic interactions by providing students with opportunities to feedback to the institution.
4. The university needs to consider setting up a device (laptop/tablet) loan system to support student access to technology. Libraries are already large lending institutions within universities and have traditionally housed on-campus computer access. However, as traditional hardcopy resources transition to an online environment (including online textbooks) and COVID-19 lockdowns blocked the availability of on-campus technology use, these institutions need to pivot to loan out technology to students and facilitate student access to the internet. When campus resources (computers and eduroam) are unavailable, equitable provision of access to technology and the internet reduces stress for students who do not have their own device, including if their internet service is limited or not affordable.

## Practical Applications

If university systems and processes put the wellbeing of the student at the heart of their learning, then their learning will thrive. If their wellbeing is depleted, then students are not going to be able to successfully engage with their learning. The first practical action for higher educational institutions moving forward should be related to knowing the extent of the problem. Therefore, measuring the prevalence of psychological distress and mapping the breadth and depth as well as the integrity of the university's support culture will assist in planning for student wellbeing. The following actions include:

1. University governance can endorse adding a mental health population screening tool (like the K10) and questions related to a sense of belonging and connectedness to regular, voluntary student evaluations. These standardised online surveys, undertaken upon unit completion, currently allow students to give feedback to the university on their satisfaction with the unit's teaching and content. At low-cost, to an already established system of data collection, the evaluations could include questions about feelings of belonging and connectedness as well as a mental health population

screening tool; this would enable longitudinal tracking. Although the response rate varies between units, these pulse surveys could inform the university on the efficacy of the structures and proximal processes (or lack of) that surround students and from which they access the factors to foster positive mental health.

2. Once prevalence is determined, an annual audit of the collective and institutional factors identifying the proximal and distal processes within each layer that foster or hinder positive mental health can be conducted as per the conceptual model in this study. Understanding the risk and protective factors that interact within and between the microsystems and macrosystems will inform the complex system of interactions that shape student mental health.
3. Although education is the primary responsibility of universities prioritising mental health has improved academic outcomes. Therefore, the federal government could examine systemic measures, such as longitudinal monitoring of educational data and including data related to mental health, to accurately measure university students' mental health and wellbeing across Australia. Shared information on mental health and the efficacy of support structures and processes will enable universities to develop evidence-based support programs. Focusing on targeted prevention through quality institutional and collective support with the student at the centre of a planned strategy and resources readily available in their immediate environment will go a long way towards fostering students' positive mental health.

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# Appendix 1

## Text mining methodology

Text mining methodology (Silge & Robinson, 2017) requires several steps. Firstly, each response was saved as a text unit, and then the text was tokenised, whereby the readable text was broken into machine-readable components (Mullen, n.d.). After data cleaning, including the removal of *stop-words* (common words that machine readers avoid, e.g., 'i', 'at', 'me'), the response words were classified into either negative or positive categories against the sentiment lexicon constructed by Hu and Liu (2004). The resulting two categories were presented in a comparison wordcloud (negative versus positive words), with the more frequent words represented in larger font to a maximum of 350 words. Following this analysis, word *stemming* was conducted to reduce the number of inflectional forms of the words appearing in the frequency counts (e.g., 'stressed', 'stressful', 'stressing', are reduced to the common stem 'stress').

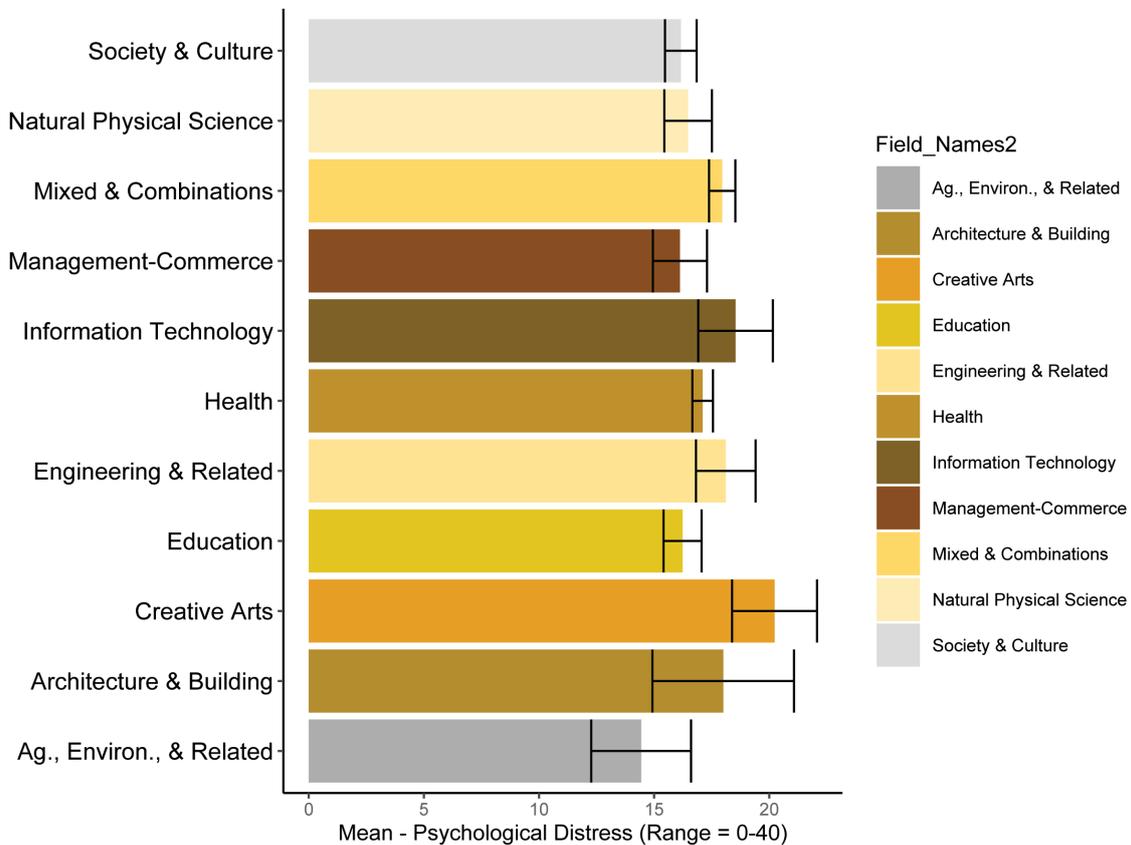
The word 'university' was excluded from the data set as it was considered integral to answering the questions. The 20 most frequently used positive and negative stem words were counted and then presented in graphical form.

Following the above classification the NRC Word-Emotion Lexicon was then used in analysis (Mohammud & Turney, 2013). This lexicon was created manually with annotations constructed by crowdsourcing. The collected data are associated with eight basic emotions (anger, fear, anticipation, trust, surprise, sadness, joy, and disgust) and two sentiments - negative and positive (Mohammud & Turney, 2013). The stemmed data set revealed between 10 to 20 most frequently used words in each emotion category with their frequencies presented in graphical form.

Lastly, representative quotes were presented through each section to provide insight and understanding of the challenges faced by university students and practical application of support mechanisms within the Australian universities. This insight about, and understanding of, the quantitative findings were sought through these open-ended responses to the reflection on what was working and what was missing during the academic year of 2020.



cent shaded confidence interval around the regression line to show the associations for psychological distress on institutional (Figure 33) and collective support (Figure 34). The relation between psychological distress on both institutional and collective support was significant and the strongest for students studying management and commerce. They reported, on average, higher levels of institutional and collective support associated with lower levels of psychological distress.



Note: K10 categories for psychological distress are (ABS, 2007; Sunderland et al., 2011); under 5 (none to low distress), 6 to 11 (moderate distress), between 12 and 19 (high distress), 20 or above (very high distress).

**Figure 32. Means (Standard Error Bars) for Psychological Distress for Categories of Fields of Education**

Students who required practicums or laboratory sessions as part of their field of education were most anxious as to their progress and ability to finish their degree. For example, some students found the simulated online laboratory sessions met their needs:

*I liked online lectures and labs - it gave more flexibility for me to study around my own time.*

While other students felt that the lack of laboratory sessions and practicums would leave them ill-equipped for the world of work:

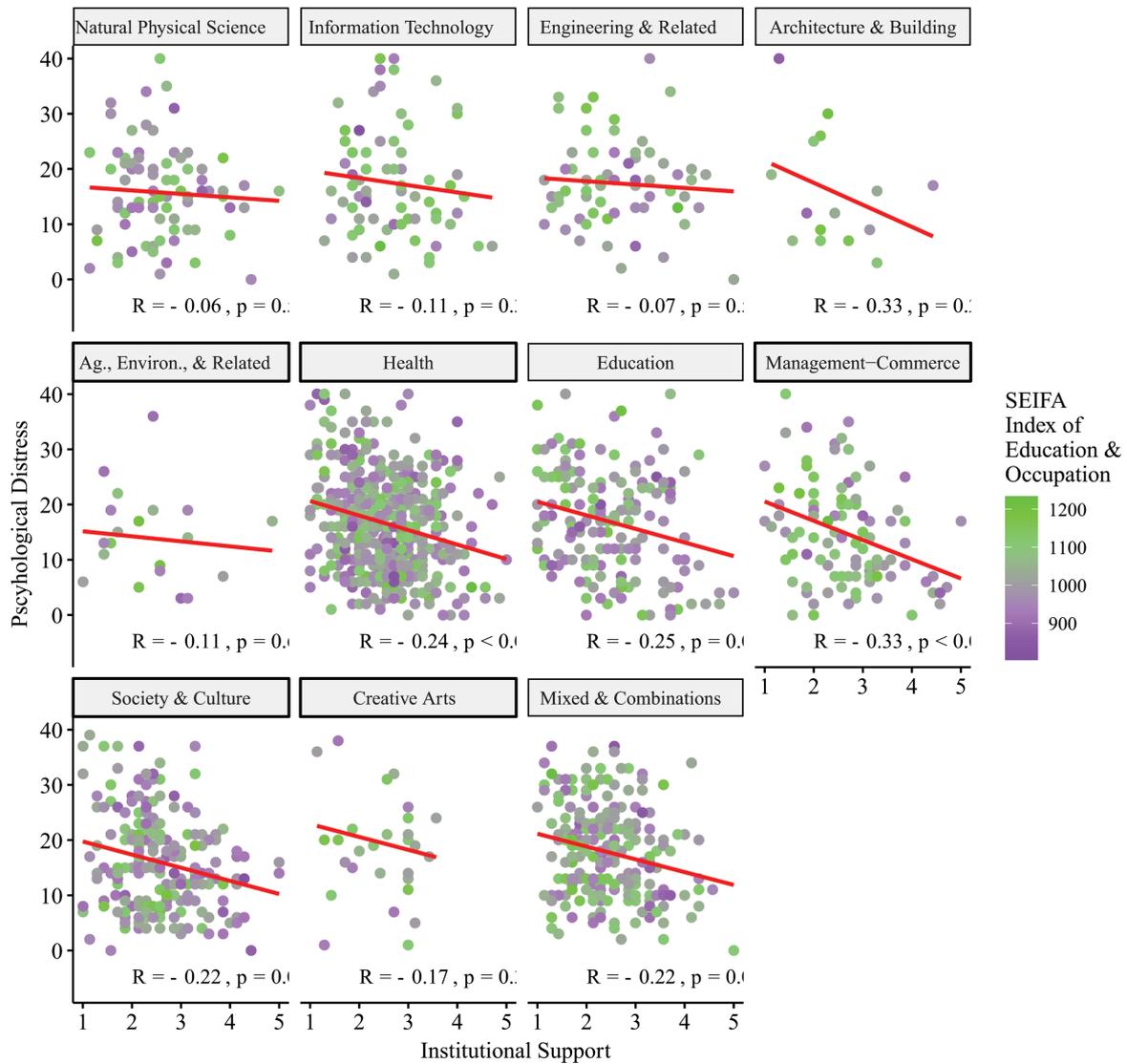
*I found it very difficult. Doing labs online was very challenging and I did not feel I was gaining the skills I need for the real world.*

*Doing a nursing degree, the hardest part was having to do our lab classes online and not having equipment to effectively practice the skills required.*

*I felt very disconnected, and obviously not having lab and library access caused major disruption, including having to change my honors (sic) project completely half way through the year.*

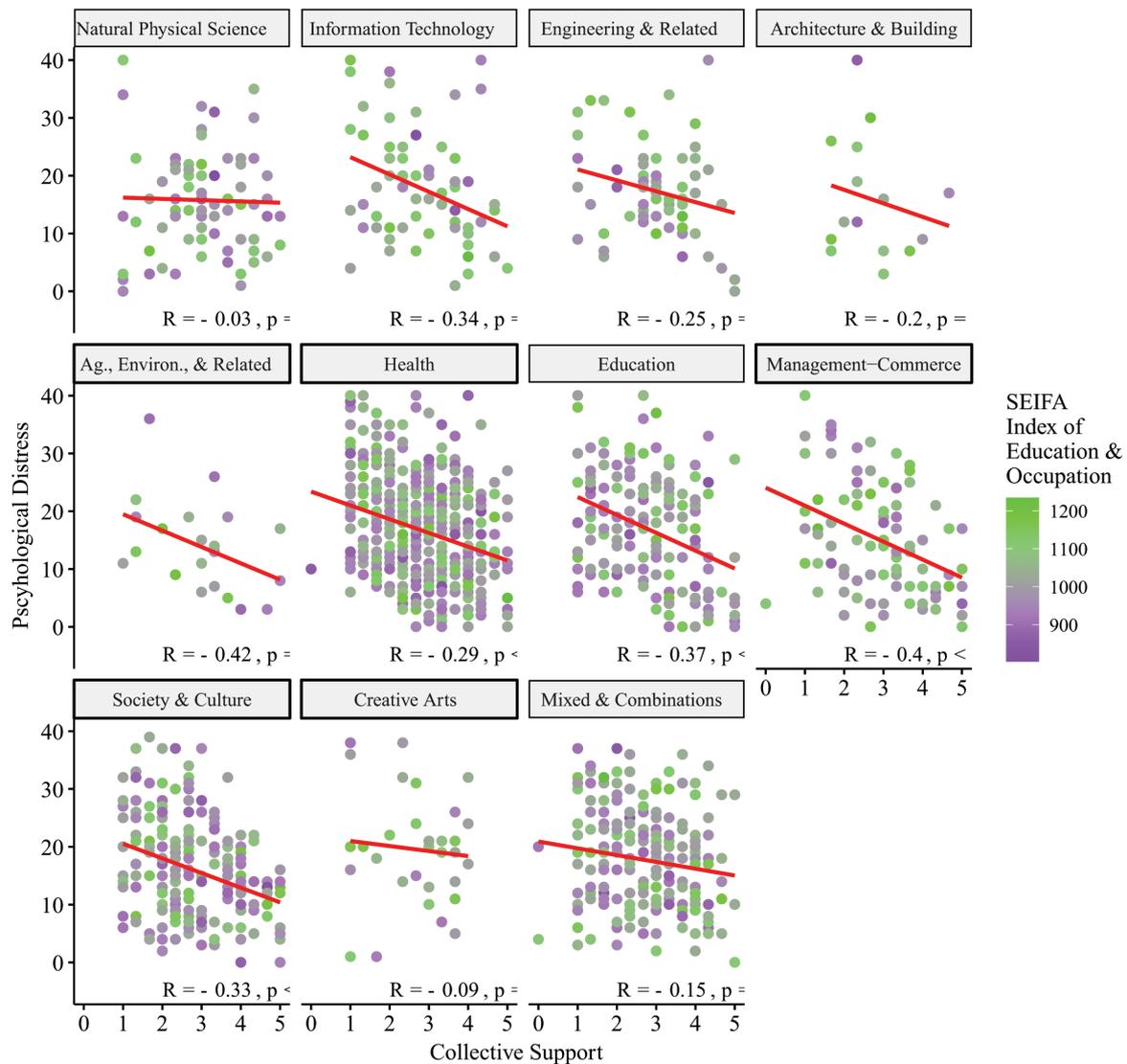
and this led to declines in wellbeing and mental ill-health:

*I'm studying vet science so doing everything online is just difficult. All of my dissection labs were cancelled and I didn't get to do many other hands-ons either. During the last semester, I had several mental breakdowns cuz [because] I found that I couldn't cope well with online studying while the pandemic seemed to be endless. I'm glad to see that most of the things are getting back to track now.*



Note: Fields of Education breakdown (Department of Education, Skills and Employment, 2021).

**Figure 33. Scatterplot and Regression Line - Relation Between Institutional Support and Psychological Distress for Field of Education**

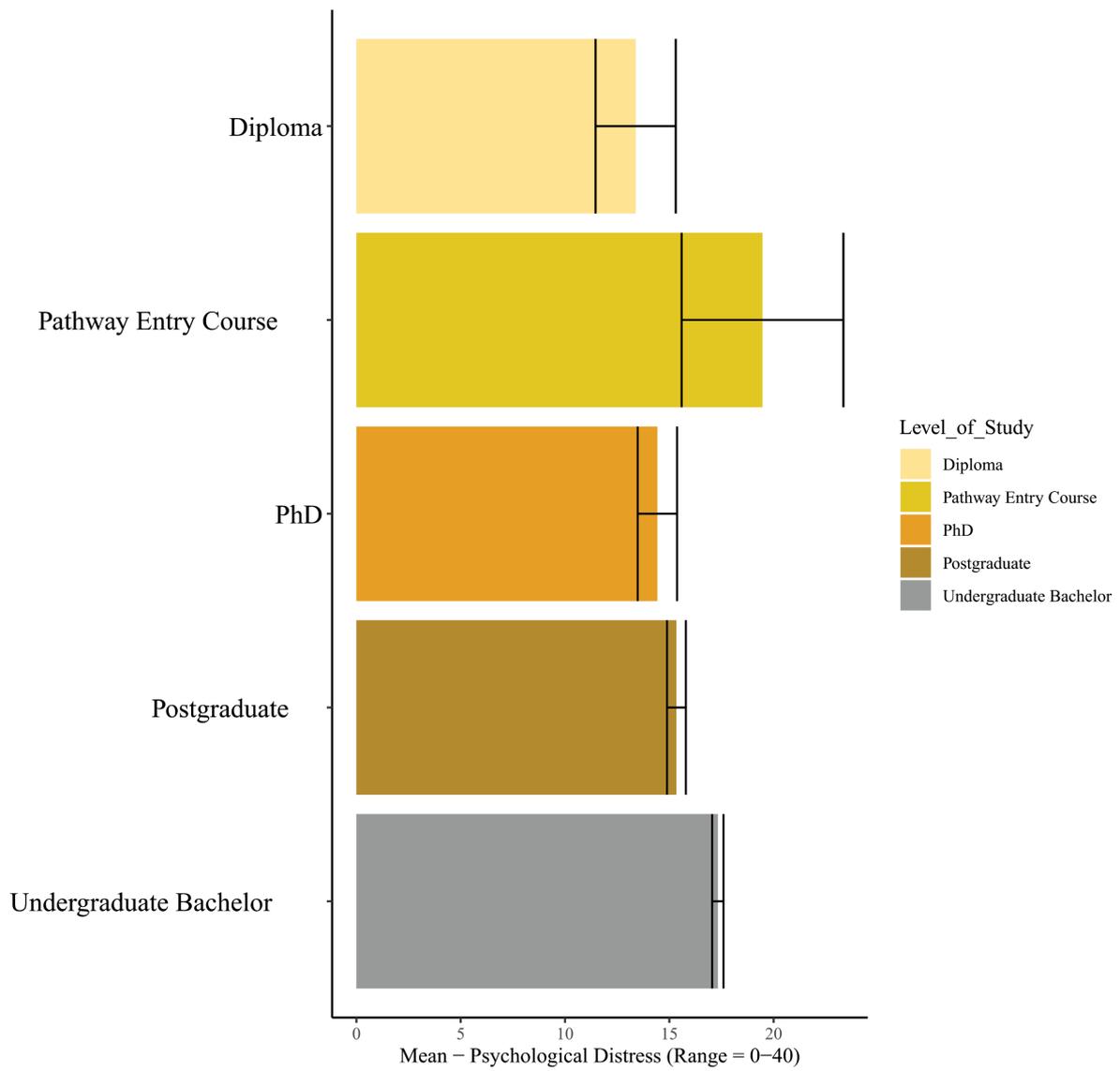


Note: Fields of Education breakdown (Department of Education, Skills and Employment, 2021).

**Figure 34. Scatterplot and Regression Line - Relation Between Collective Support and Psychological Distress for Each Field of Education**

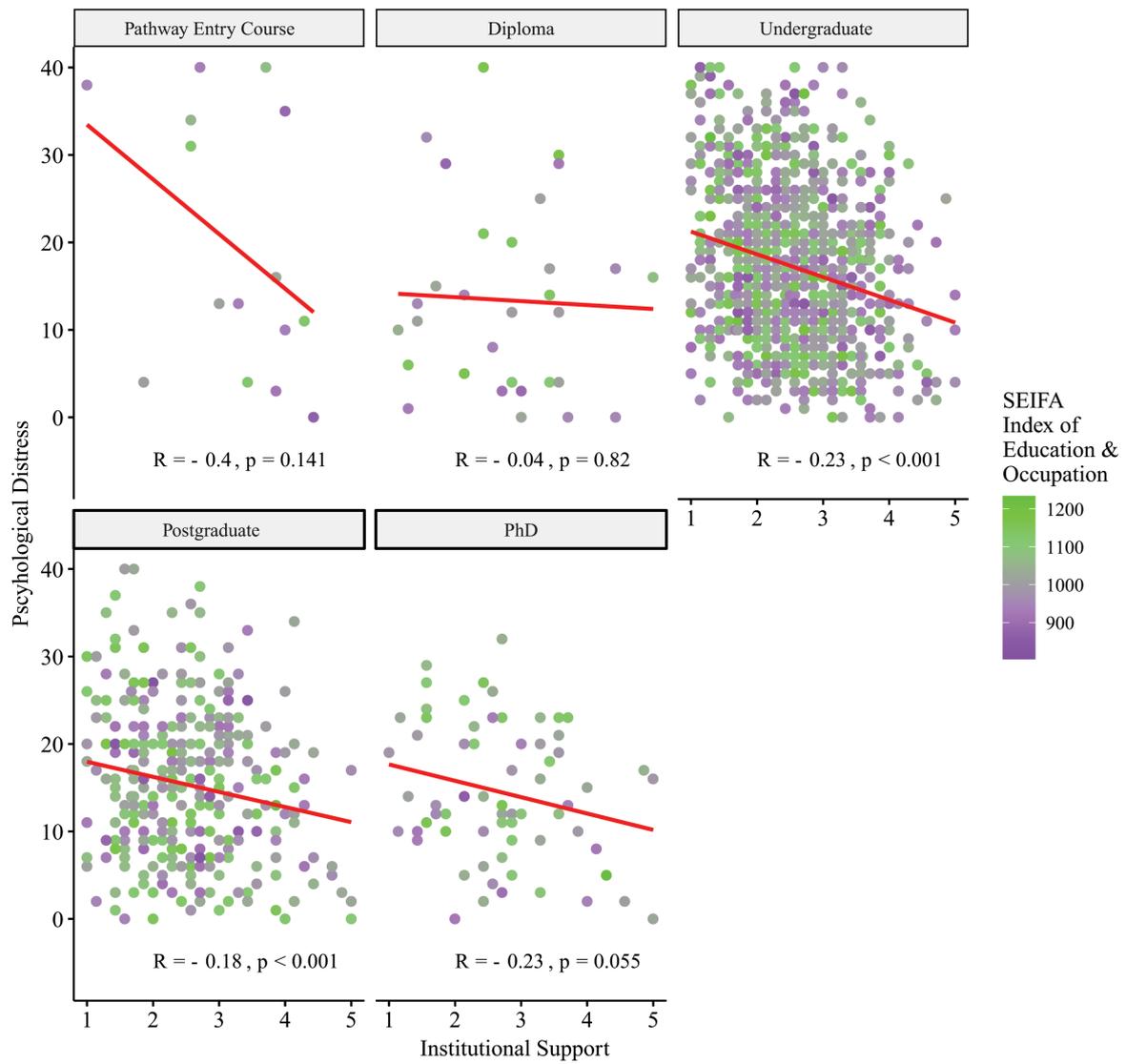
### Level of study

The means for the level of study for students are shown in Figure 35 (with standard error bars). To determine if there were mean differences an ANOVA was performed indicating significant differences between the mean psychological distress scores for each level of study,  $F(4, 1481) = 6.11, p < .001$ . A Bonferroni post hoc analysis indicates the mean of psychological distress was significantly different between students at the undergraduate level compared to the postgraduate level (see Figure 35). Figures 36 and 37 shows the scatter plots with linear regression lines for the level of study categories, with a 95 per cent shaded confidence interval around the regression line to show the associations for psychological distress on institutional (Figure 36) and collective support (Figure 37). The relation between psychological distress on both institutional and collective support was significant and the strongest for students studying at an undergraduate and postgraduate level. They reported, on average, higher levels of institutional and collective support associated with lower levels of psychological distress. PhD students reported, on average, higher levels of collective support which associated with lower levels of psychological distress.

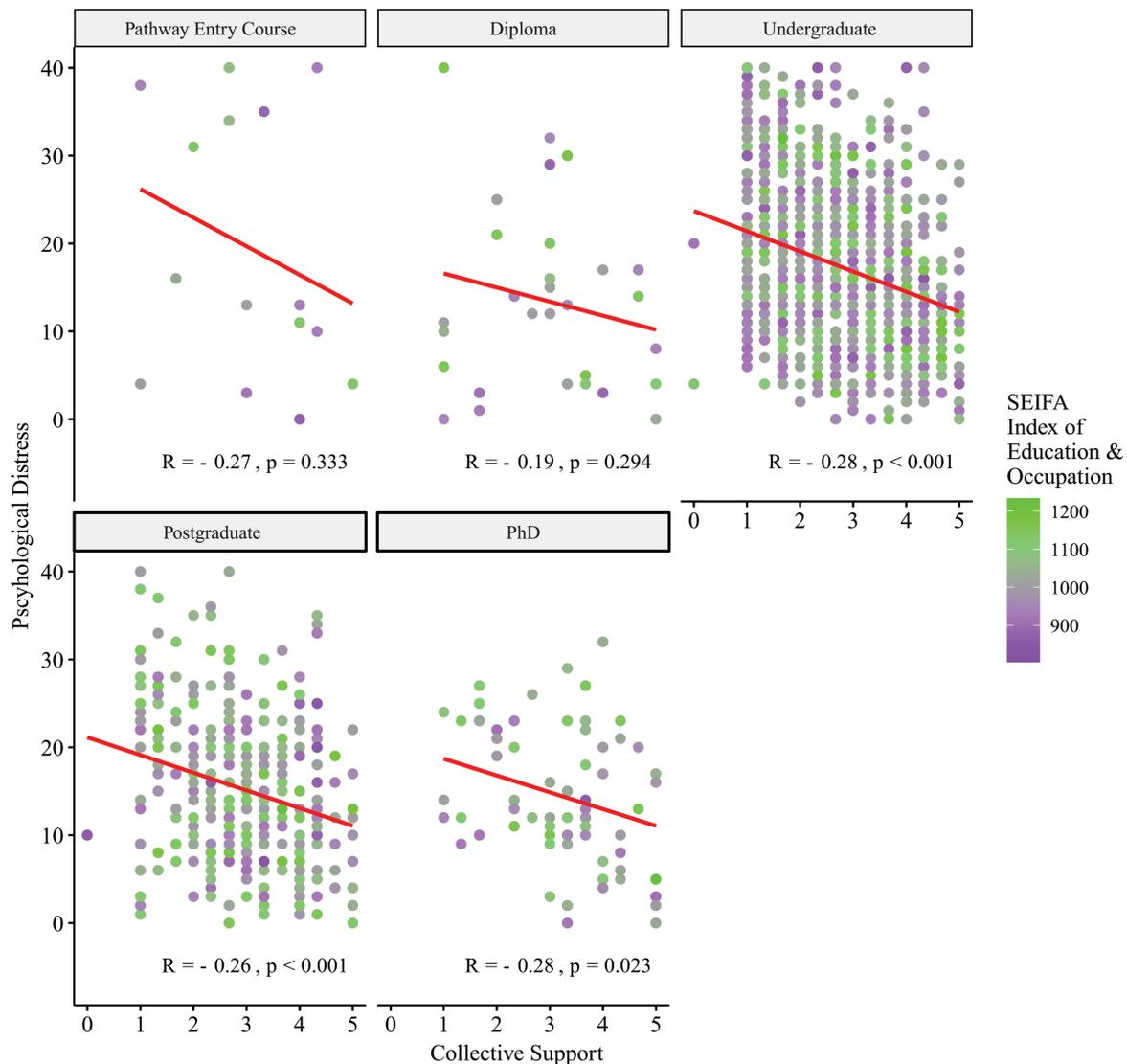


Note: K10 categories for psychological distress are (ABS, 2007; Sunderland et al., 2011); under 5 (none to low distress), 6 to 11 (moderate distress), between 12 and 19 (high distress), 20 or above (very high distress).

**Figure 35. Means (standard error bars) for Psychological Distress (K10) for Level of Study**



**Figure 36. Scatterplot and Regression Line - Relation Between Institutional Support and Psychological Distress for Level of Study**



**Figure 37. Scatterplot and Regression Line - Relation Between Collective Support and Psychological Distress for Level of Study**

Although many PhD students could continue their research at home they found the experience isolating. They felt studying at a PhD level would help them with their career and also provide a network of supportive academic peers with this component missing when COVID-19 lockdowns occurred and they couldn't study on campus.

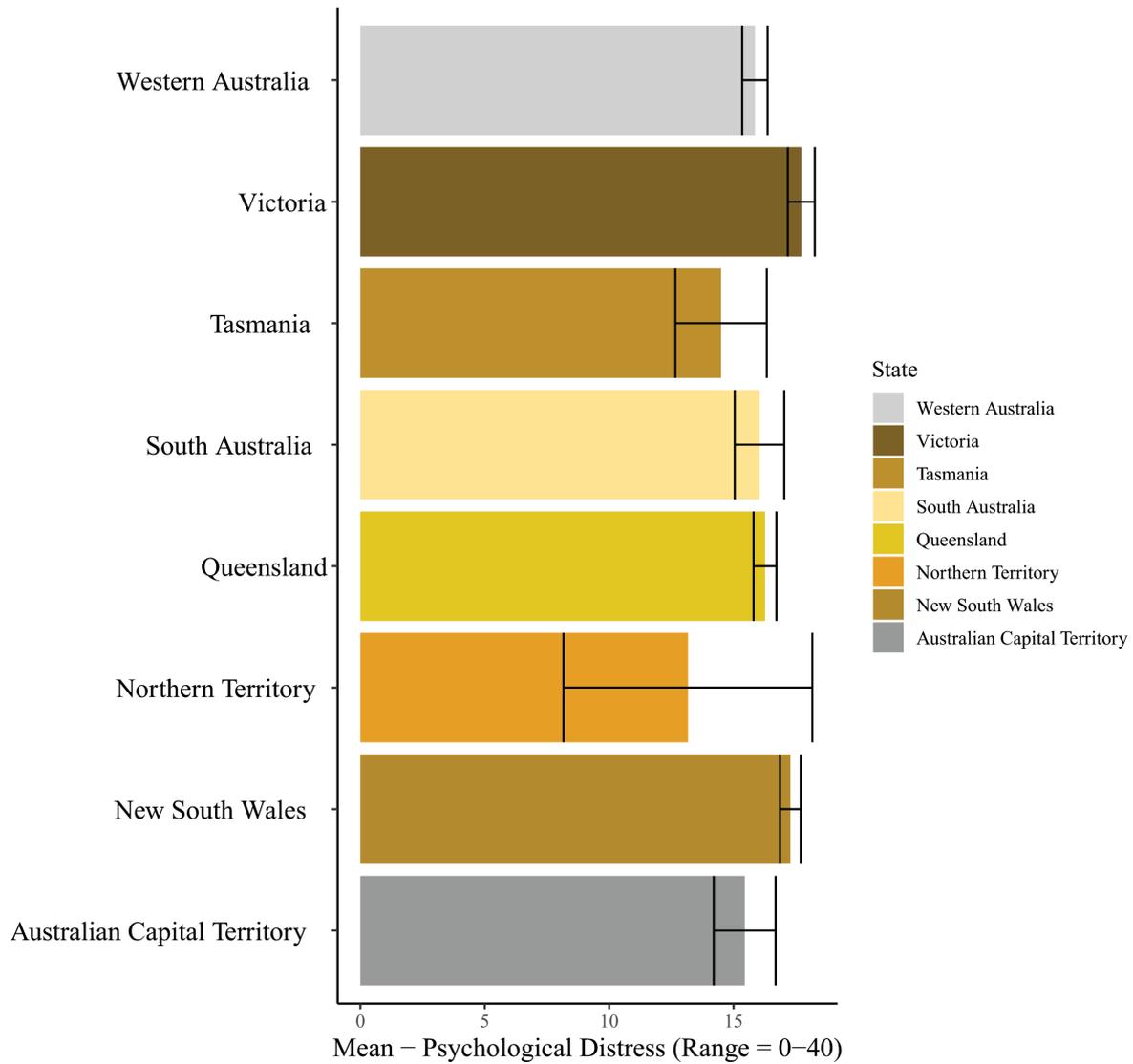
*I stopped going on-campus from March 13. Luckily, I was able to work from home. But - as a PhD student - I feel like I have missed out on being part of and experiencing a research/academic community.*

### States of Australia

The means for each state in Australia are shown in Figure 38 (with standard error bars). To determine if there were mean differences an ANOVA was performed indicating no significant differences between the mean psychological distress scores for each State in Australia,  $F(7, 1420) = 1.73, p = .08$ .

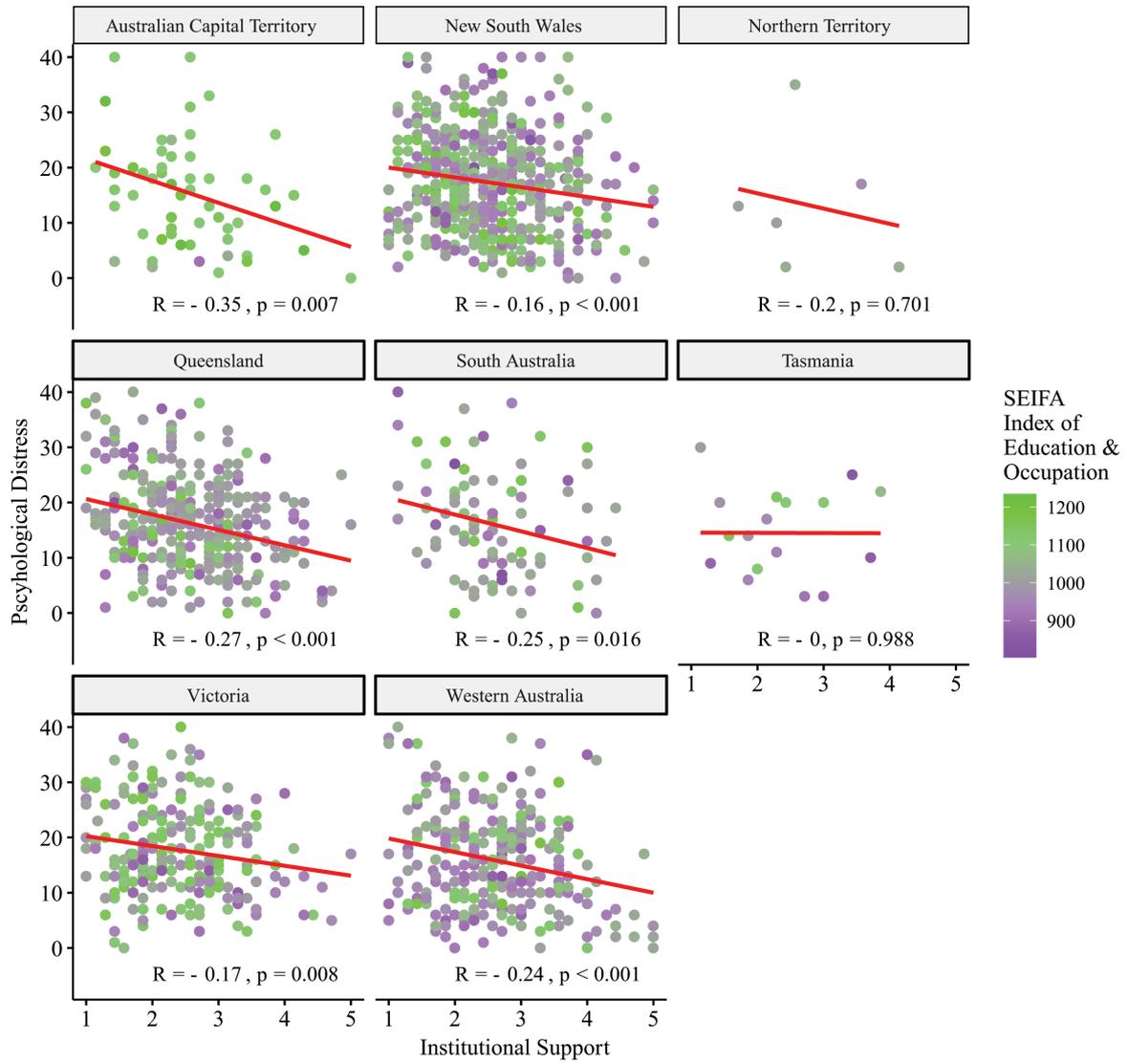
Figures 39 and 40 shows the scatter plots with linear regression lines for the states of Australia where the students studied, with a 95 per cent shaded confidence interval around the regression line to show the associations for psychological distress on institutional (Figure

39 and collective support (Figure 40). The relation between psychological distress on both institutional and collective support was significant and the strongest for students studying in the Australian Capital Territory. They reported, on average, higher levels of institutional and collective support associated with lower levels of psychological distress. There was no significant association for students in Tasmania and Northern Territory. This finding needs to be interpreted with caution due to the small sample sizes.

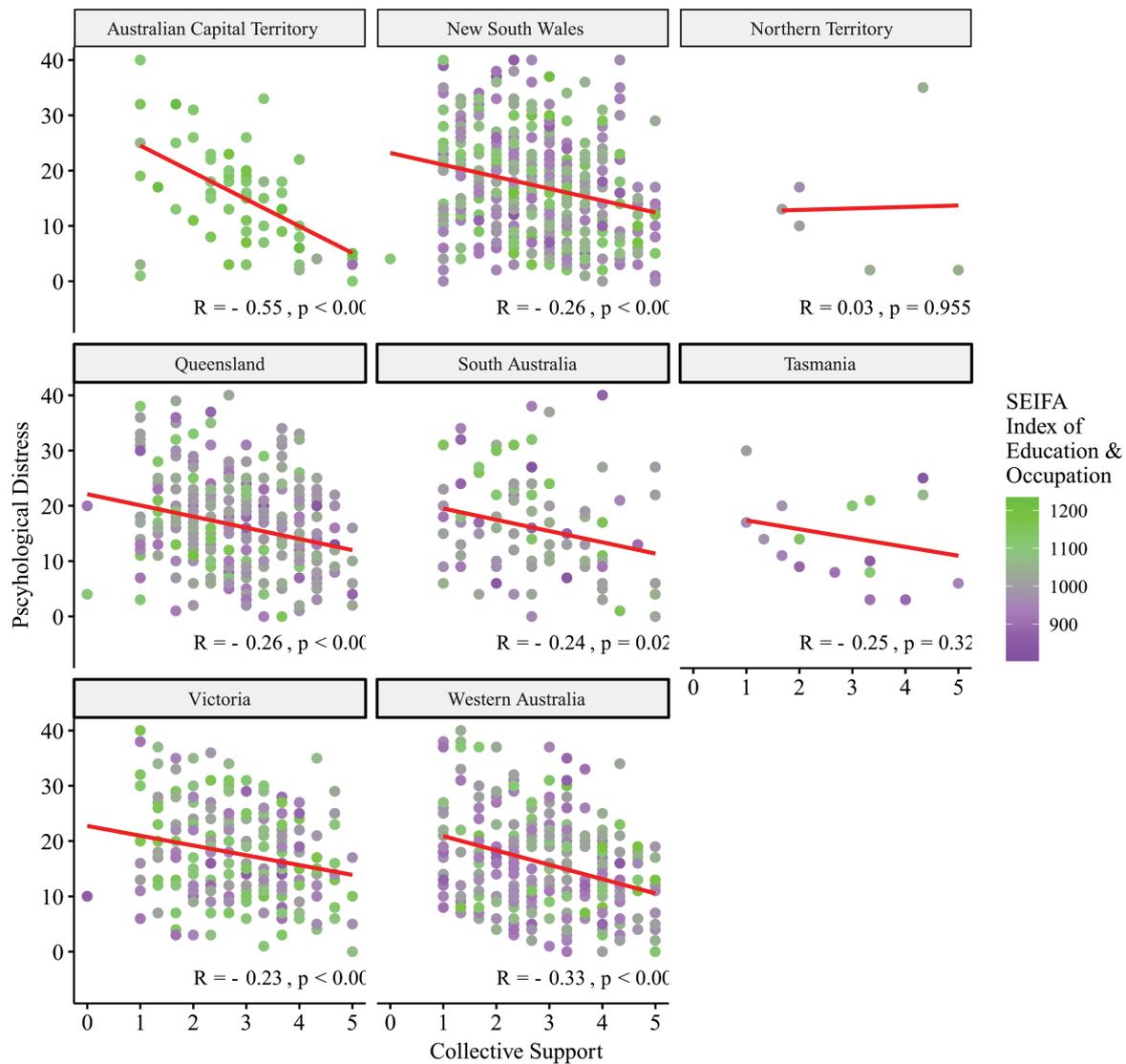


Note: K10 categories for psychological distress are (ABS, 2007; Sunderland et al., 2011); under 5 (none to low distress), 6 to 11 (moderate distress), between 12 and 19 (high distress), 20 or above (very high distress).

**Figure 38. Means (standard error bars) for Psychological Distress (K10) for Each State in Australia**



**Figure 39. Scatterplot and Regression Line - Relation Between Institutional Support and Psychological Distress for State of Residence**



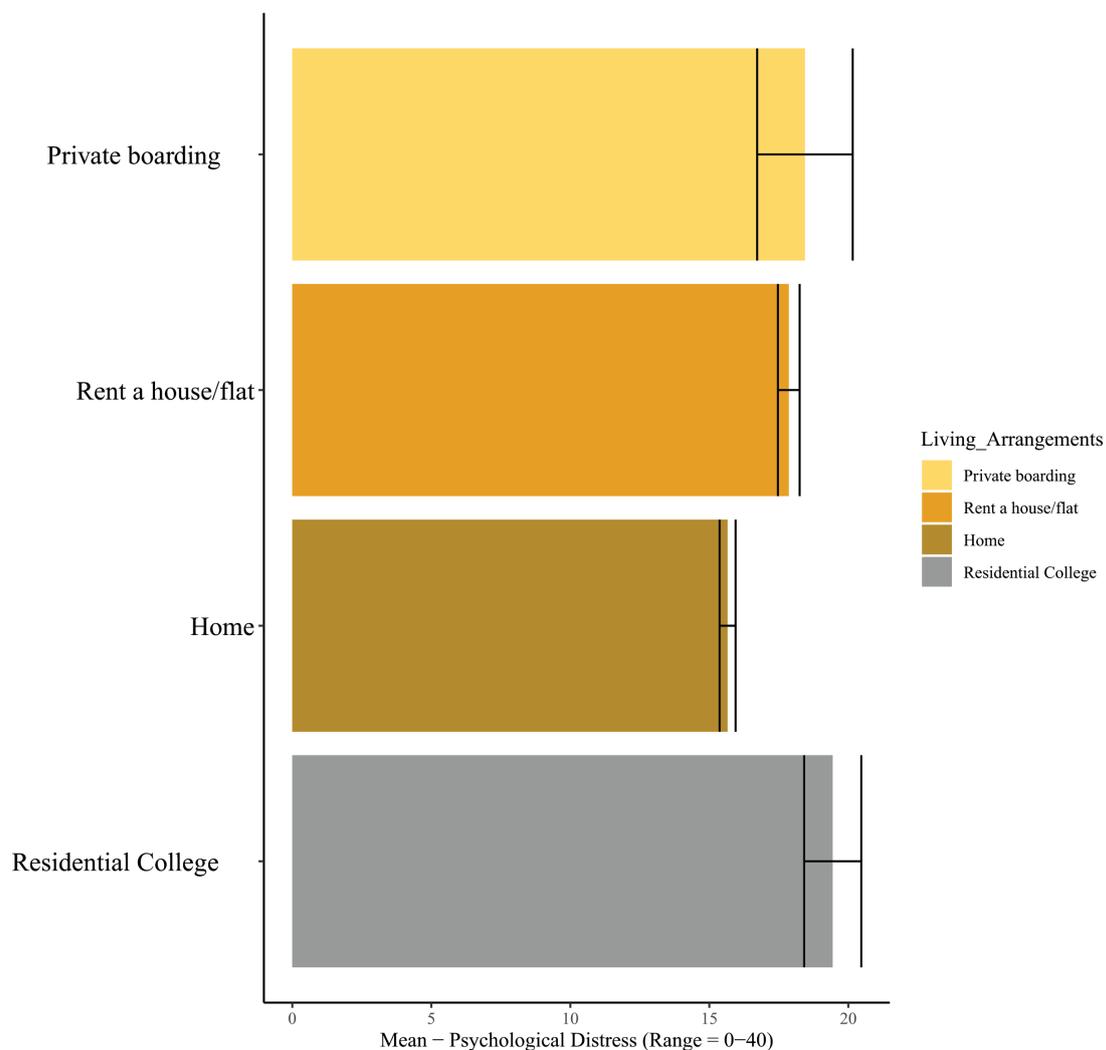
**Figure 40. Scatterplot and Regression Line - Relation Between Collective Support and Psychological Distress for State of Residence**

Some states of Australia were in lockdown for longer periods than others, and this resulted in students being disproportionately disadvantaged compared to their peers in other states as universities tried to cater for the disruption but also meet course requirements:

*I felt an extreme lack of support from the senior academic staff in my clinical PhD course. On paper, they have been good, checking in with us a couple of times throughout the semester and telling us that they want to support us. However, now my whole cohort faces a deadline (pre-submission seminar for our PhD) that is out of the blue, 6 months earlier than the year before us, and does not factor in the automatic 3 month extension that we have received from the university. Now we need action and support from our academic faculty and are not receiving this (i.e. told to complete the milestone as scheduled). Although this is a specific example, I feel that it typifies my experience with my course leaders over the COVID period, where support is offered in a theoretical sense but not a meaningful one. I am extremely disappointed by this. Most of my cohort will not be taking summer holidays despite being entitled to this time and desperately needing a break in the setting of Victoria's extended lockdown. I feel that myself and my peers are being treated unjustly by our university.*

## Mode of residence

The means for each mode of residence are shown in Figure 41 (with standard error bars). To determine if there were mean differences, an ANOVA was performed indicating significant differences between the mean psychological distress scores for the mode of residence,  $F(3, 1480) = 10.64, p < .001$ . A Bonferroni post hoc analysis indicates the mean of psychological distress was significantly different between students who lived at home compared to students who were renting a house/flat or students staying at a residential college (see Figure 41). Figures 42 and 43 shows the scatter plots with linear regression lines for the mode of residence for students when they were studying, with a 95 per cent shaded confidence interval around the regression line to show the associations for psychological distress on institutional (Figure 42) and collective support (Figure 43). The relation between psychological distress on both institutional and collective support was significant and the strongest for students studying and living in residential colleges. They reported, on average, higher levels of institutional and collective support associated with lower levels of psychological distress. The effect size for collective support as an explanatory variable for psychological distress was large for residential college students and those who boarded privately ( $>.5$ ).

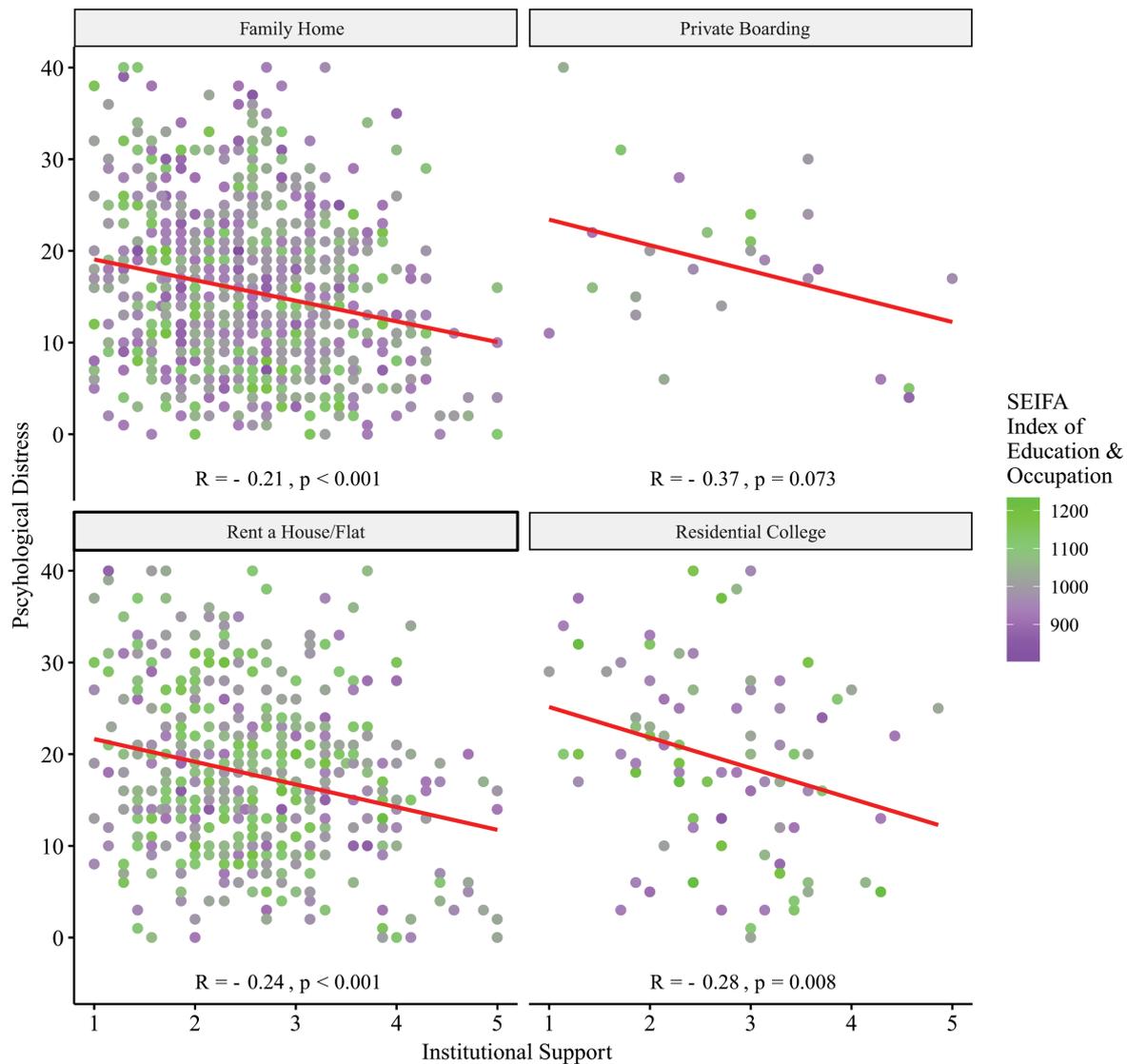


Note: K10 categories for psychological distress are (ABS, 2007; Sunderland et al., 2011); under 5 (none to low distress), 6 to 11 (moderate distress), between 12 and 19 (high distress), 20 or above (very high distress).

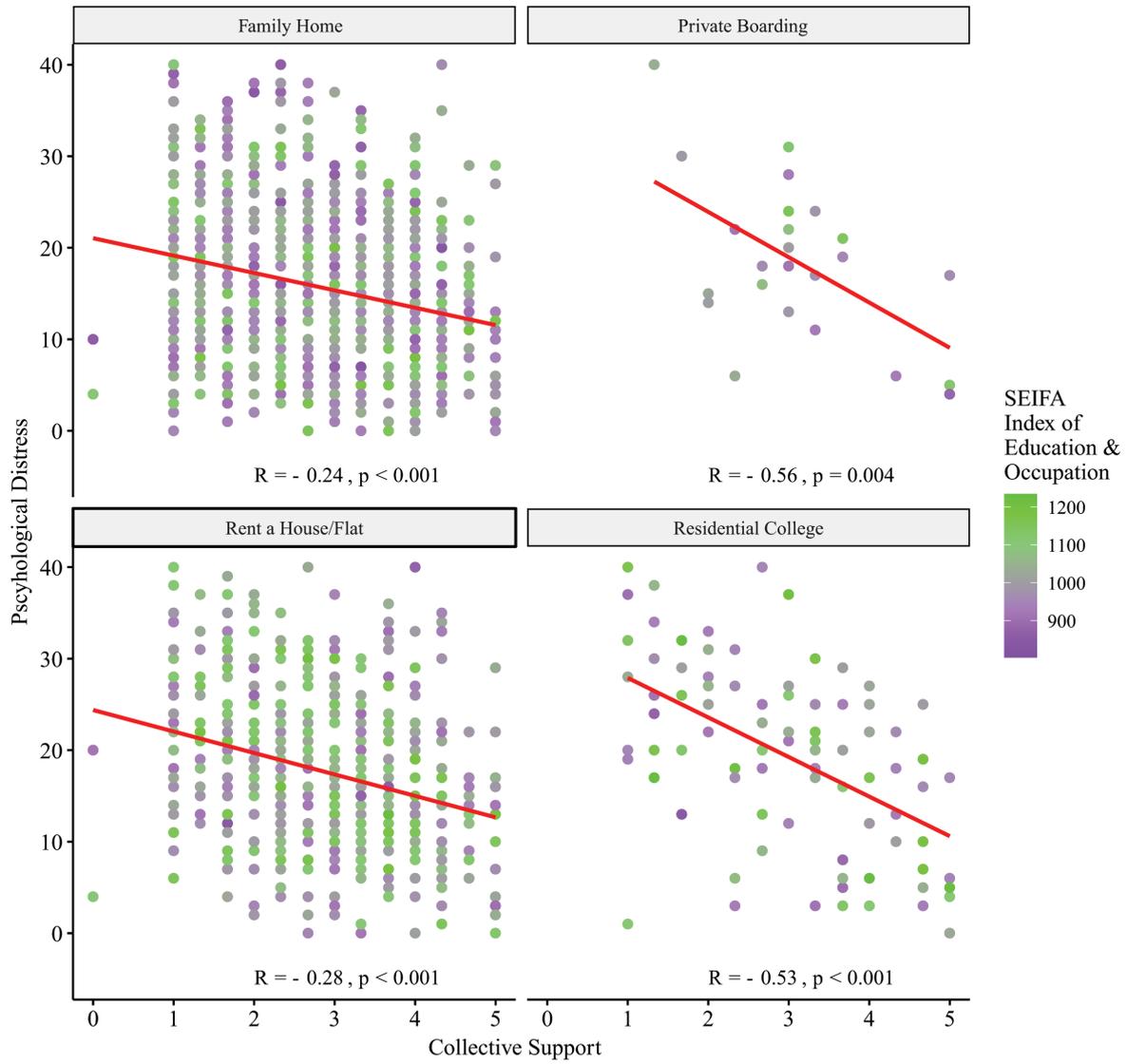
**Figure 41. Means (standard error bars) for Psychological Distress (K10) for Mode of Residence**

Residential colleges attached to universities normally offer academic, physical (gyms) and mental health support within their unique community. Because the students living in each college share communal areas such as food halls and laundries, the residents in each college were considered, in terms of lockdown health orders, to be in their own social bubble so interactions and peer-to-peer tutoring could still occur and this collective support helped students to cope with the disruptions:

*Uni [university] in 2020 was definitely not what I was expecting at the beginning of the year. Although the Uni did their best to accommodate for COVID-19 with online uni, I do not feel as though I know the content as well as I usually do with face-to-face classes. In addition to this, it was more difficult than usual to find motivation to study, but tutoring and studying in groups at my residential college definitely helped in that regard.*



**Figure 42. Scatterplot and Regression Line - Relation Between Institutional Support and Psychological Distress for Mode of Residence**



**Figure 43. Scatterplot and Regression Line - Relation Between Collective Support and Psychological Distress for Mode of Residence**