

What can be done to Improve the Mental Health of University Students? Identifying Determinants of Psychological Distress at an Australian University

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Abstract

Background: Mental health problems are common among university students. This study examined associations between determinants of mental health and psychological distress among university students with the aim of identifying priorities for policy and practice action.

Methods: This cross-sectional study included 3,581 university students (response rate: 7.1%) who completed an anonymous online survey. Individual determinants included socio-demographics and financial, housing, and employment status. Community (university) determinants were social inclusion, social acceptance, and overall satisfaction. Psychological distress, measured using the six-item Kessler Psychological Distress Scale, was modelled (as outcome) using multiple linear regression.

Results: Mutually-adjusted individual-level determinants were age (β [95% CI]: -0.50 [-0.60, -0.41]), LGBTQI+ identity (0.96 [0.52, 1.40]), having a current health condition (3.23 [2.85, 3.60]), being a current carer (0.68 [0.04, 1.32]), country of birth other than Australia (1.19 [0.84, 1.54]), financial stress (2.43 [1.99, 2.86]), being satisfied with housing (-0.84 [-1.18, -0.51]), and having full-time employment (-0.49 [-0.99, 0.00]). Community determinants were social inclusion (-0.97 [-1.34, -0.59]), social acceptance (-0.82 [-1.32, -0.33]), and overall satisfaction (-1.74 [-2.21, -1.28]) at university.

Conclusion: Results suggest that interventions at this university could beneficially target financial stress, housing satisfaction, employment status and social inclusion, social acceptance, and overall satisfaction at university. For maximum benefit, programs could prioritise or be tailored to younger students, current carers, those born outside of Australia, and those who identify as LGBTQI+ or have a current health condition.

Keywords

Depression; Anxiety; Stress; Social determinants; Mental health; University; Students.

Introduction

Mental health problems represent 16% of global disability and incur an economic burden of US\$4.7 trillion per annum (Arias et al., 2022). Given half of all mental health problems have an onset by 14 years of age and 75% manifest by 24 years (Kessler et al., 2005), university is considered both a high-risk setting and a suitable setting for preventive intervention (Duffy et al., 2019). For example, a survey of 19 universities spanning eight countries identified one in three university students had at least one common anxiety, mood, or substance disorder (Auerbach et al., 2018). Whilst these data have resulted in evidence-based recommendations, such as those proposed by the *Australian University Mental Health Framework* (Orygen, 2020), there remains a need to tailor programs to local contexts, both in terms of specific needs and corresponding preventative strategies.

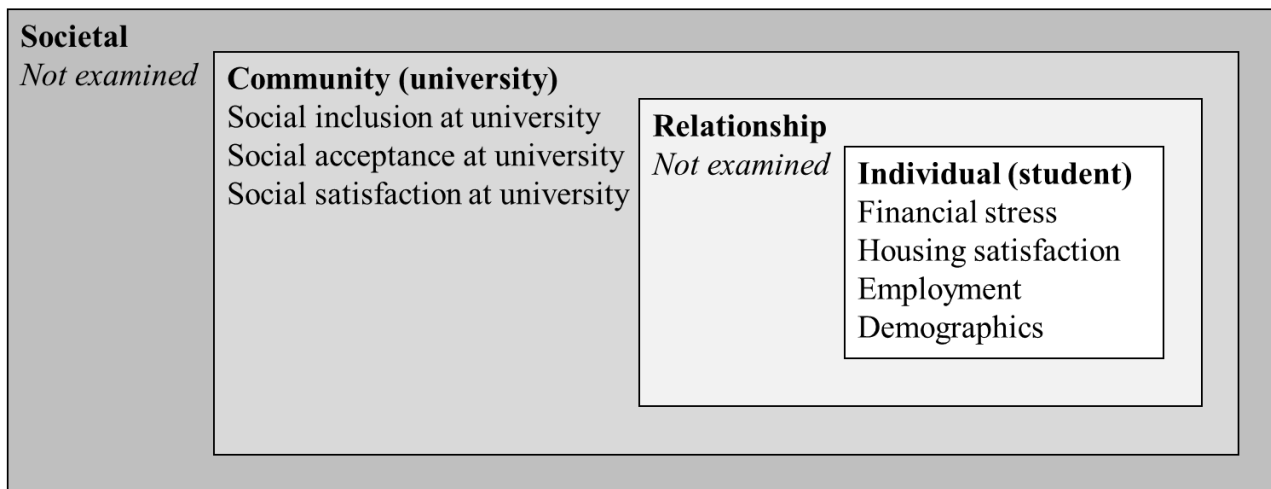
Protecting and promoting mental health optimally includes comprehensive strategies addressing a range of determinants of mental health (McGorry et al., 2022). For example, an analysis of tertiary students in Australia showed age, the number of hours worked per week, and financial problems

were associated with psychological distress (Cvetkovski et al., 2012). Moreover, determinants of psychological distress among students span individual (e.g., student levels of mental health literacy), community (e.g., prevailing norms of stigma against mental illness), and societal (e.g., access to mental health services) levels (Alegría et al., 2023). Therefore, interventions need to target determinants at the corresponding levels, such as education and awareness campaigns (to promote mental health literacy), anti-stigma awareness campaigns and policy interventions (to reduce stigma), and healthcare system change (to improve access to support and treatment) (LaMontagne et al., 2023; Alegría et al., 2023; McGorry et al., 2022).

This paper extends a previous analysis of mental health literacy in a large Australian university (LaMontagne et al., 2023) to examine the role of other determinants of mental health in the same sample to inform the university mental health strategy. Given the limitations of the data available, we applied a simplified social determinants framework. This is based on a socio-ecological model (Krug et al., 2002) that examines determinants at the individual (student) and community (university) levels to inform better targeted interventions (Figure 1).

Figure 1

Overview of Determinants of Mental Health by Social-ecological Level



Methods

Study design and population

A cross-sectional online survey was conducted in July 2019 (LaMontagne et al., 2023). The study was conducted in line with the *Declaration of Helsinki* and approved by the Deakin University Human Research Ethics Committee (2019-148). All participants provided informed consent prior to involvement in the study. Census sampling was conducted, with the survey sent to all enrolled students.

All 52,341 students currently enrolled at a university in Victoria, Australia were emailed an invitation from the Dean of Students to complete a voluntary “Inclusion and Wellbeing Survey”. Participants anonymously completed the survey in their own time. On completion, students were invited to enter a prize draw to win a AU\$100.00 gift card, with all identifying information decoupled from survey responses. After removing responses with <40% completion ($n=590$), an effective response rate of 7.1% was achieved (3,735/52,341). A comparison between the sample drawn and university student enrolment data is presented elsewhere (LaMontagne et al., 2023). For

the current study, a further 154 students were excluded due to missing psychological distress data, which resulted in a total sample of 3,581 students.

The representativeness of the sample is detailed elsewhere (LaMontagne et al., 2023). In brief, no differences were detected for socio-economic status, Aboriginal or Torres Strait Islander identity, campus location, and domestic/international student status. Notable differences included an under-representation of Chinese students and an over-representation of females students, older age students, and students with a disability.

Measures

Psychological distress (outcome)

The six-item Kessler Psychological Distress Scale measured subjective psychological distress (Kessler et al., 2002). The questionnaire asked how often during the past 30 days the participant felt: (1) nervous, (2) hopeless, (3) restless or fidgety, (4) so depressed that nothing could cheer them up, (5) that everything was an effort, and (6) worthless. Each question was scored from zero (none of the time) to four (all of the time) points and all six scores were summed (range: 0–24 points). Higher scores indicated higher levels of psychological distress. The six-item Kessler Psychological Distress Scale has acceptable (Tavakol & Dennick, 2011) internal consistency (Cronbach's $\alpha=0.89$) (Kessler et al., 2002).

Individual (student) determinants

Demographic measures included age (17–20 years, 21–24 years, 25–29 years, 30–34 years, 35–39 years, 40–44 years, 45–49 years, 50+ years) and gender (female, male, non-binary), as well as whether students identified as LGBTQI+ (yes, no), had any current health condition (including mental health problems; yes, no), identified as Aboriginal or Torres Strait Islander (yes, no), had a country of birth other than Australia (yes, no), or were a current carer (yes, no; Supplement A).

A three-item measure assessed current housing satisfaction. Students rated their satisfaction in housing quality, affordability, and distance from university campus on a five-point Likert scale: very satisfied, satisfied, neutral, dissatisfied, very dissatisfied. The three scales were each scored from zero (very satisfied) to four (very dissatisfied) and summed for an overall score of housing satisfaction (range: 0–12 points), whereby scores ≤ 3 points indicated satisfied and >3 points indicated not satisfied.

A one-item measure captured current full-time employment status (yes, no), noting that part-time employment is common at ~53% of respondents.

Current financial stress (yes, no) was measured with nine items. Per the Australian Bureau of Statistics (2017), financial stress was defined as experiencing four or more financial stress indicators (financial stress experiences or missing out experiences) within a 12-month period.

Community (university) determinants

A one-item measure assessed social inclusion at university on a five-point Likert scale dichotomised to yes (very included, somewhat included) or no (neutral, somewhat excluded, very excluded). A one-item measure assessed social acceptance at university on a five-point Likert scale dichotomised to yes (very accepted, somewhat accepted) or no (neutral, somewhat unaccepted, very unaccepted). A one-item measure assessed overall satisfaction at university on a five-point Likert scale dichotomised to yes (very satisfied, somewhat satisfied) or no (neutral, dissatisfied, not at all satisfied).

Statistical analyses

All analyses were conducted using Stata (17, StataCorp, College Station, United States of America). Associations between categorical determinants and psychological distress were examined via independent *t*-test (two groups) or analysis of variance with Tukey post-hoc adjustment (three or more groups). Associations between continuous determinants and psychological distress were examined via linear regression. A stepwise multiple linear regression model examined psychological distress using all determinants and employed an adjusted α of 0.10 to enter and 0.20 to remove, per prior research (Owen et al., 2022). An α of 0.05 was adopted for all other analyses.

Results

The majority of students were women; aged 21–24 years; born within Australia; did not identify as LGBTQI+, Aboriginal, or Torres Strait Islander; did not have a current health condition; and were not a current carer (Table 1). Among the total sample ($N=3,581$), mean (*SD*) psychological distress was 8.0 (5.2) points (range: 0–24 points; Figure 2).

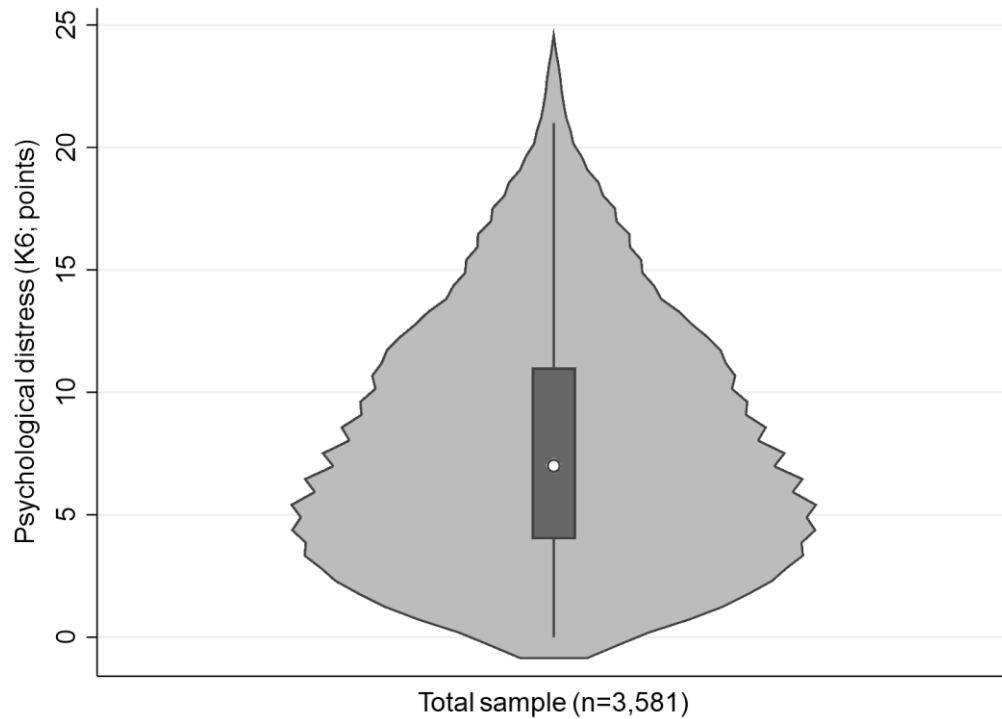
Table 1*Sample Descriptive Statistics (Total N=3,581)*

Measure	n (%)
Age	
17–20 years	868 (24.2)
21–24 years	976 (27.3)
25–29 years	713 (19.9)
30–34 years	352 (9.8)
35–39 years	237 (6.6)
40–44 years	166 (4.6)
45–49 years	121 (3.4)
50+ years	148 (4.1)
Gender	
Female	2,473 (69.1)
Male	1,025 (28.6)
Non-binary	83 (2.3)
Non-binary gender	
Yes	83 (2.3)
No	3,498 (97.7)
LGBTQI+	
Yes	604 (16.9)
No	2,977 (83.1)
Current health condition	
Yes	1,125 (31.4)
No	2,456 (68.6)
Aboriginal or Torres Strait Islander	
Yes	56 (1.6)
No	3,525 (98.4)
Current carer	
Yes	276 (7.7)
No	3,305 (92.3)
Country of birth other than Australia	
Yes	1,208 (34.6)
No	2,442 (65.4)
Current financial stress	
Yes	629 (17.6)
No	2,952 (82.4)
Current housing satisfaction	
Yes	1,718 (55.7)
No	1,365 (44.3)
Current full-time employment	
Yes	610 (17.3)
No	2,915 (82.7)
Social inclusion at university	
Yes	2,185 (38.0)
No	1,337 (62.0)
Social acceptance at university	
Yes	2,969 (85.0)
No	525 (15.0)
Overall satisfaction at university	
Yes	2,847 (80.9)
No	671 (19.1)

Note. Data are count (percentage) for total sample.

Figure 2

Violin Plot of Psychological Distress (Measured via the Six-Item Kessler Psychological Distress Scale; K6) among the Total Sample (N=3,581)



Note. Increasing score represents increasing psychological distress level.

Bivariate associations between individual determinants and psychological distress are shown in Table 2 in brief and Supplement B in detail.

Table 2*Bivariate Associations: Determinants of Mental Health and Psychological Distress (K-6 Score) (Total N=3,581)*

Measure	K-6 score, points Mean (SD)
Age	
17–20 years	8.43 (5.05) ^{b, c, d, e}
21–24 years	8.69 (5.10) ^{a, b, c, d, e}
25–29 years	8.36 (5.16) ^{b, c, d, e}
30–34 years	7.66 (4.95) ^d
35–39 years	7.06 (5.32) ^d
40–44 years	6.63 (5.06) ^d
45–49 years	4.65 (4.32)
50+ years	6.19 (5.18)
Gender	
Female	8.22 (5.12) ^{f, g}
Male	7.37 (5.09) ^g
Non-binary	10.05 (6.11)
Non-binary gender	
Yes	10.05 (6.11) ^h
No	7.97 (5.13)
LGBTQI+	
Yes	9.76 (5.30) ^h
No	7.66 (5.06)
Current health condition	
Yes	10.76 (5.31) ^h
No	6.76 (4.57)
Aboriginal or Torres Strait Islander	
Yes	9.00 (6.07)
No	8.00 (5.14)
Carer	
Yes	8.59 (5.82)
No	7.97 (5.10)
Country of birth other than Australia	
Yes	8.15 (5.19)
No	7.95 (5.14)
Current financial stress	
Yes	11.07 (5.50) ^h
No	7.36 (4.84)
Current housing satisfaction	
Yes	7.23 (4.91) ^h
No	9.25 (5.22)
Current full-time employment	
Yes	6.74 (4.90) ^h
No	8.28 (5.14)
Social inclusion at university	
Yes	7.20 (4.77) ^h
No	9.33 (5.49)
Social acceptance at university	
Yes	7.52 (4.93) ^h
No	10.64 (5.47)
Overall satisfaction at university	
Yes	7.36 (4.84) ^h
No	10.71 (5.54)

Note. Data are mean (SD). Unadjusted bivariate comparisons: ^a $p < 0.05$ compared to 30–34 years, ^b $p < 0.05$ compared to 35–39 years, ^c $p < 0.05$ compared to 40–44 years, ^d $p < 0.05$ compared to 45–49 years, ^e $p < 0.05$ compared to 50+ years, ^f

$p < 0.05$ compared to male, ^g $p < 0.05$ compared to non-binary, ^h $p < 0.05$ compared to no. Results of all pairwise comparisons are shown in Supplement B.

Overall, students aged 17–29 years had greater psychological distress compared to students in all other age groups. Various age group comparisons are provided in Table 1. Females reported greater psychological distress than males. Students who identified as non-binary showed greater psychological distress than females, males, or males/females combined. Greater psychological distress was reported by students who identified as LGBTQI+ and students who identified as having a current health condition. Psychological distress did not differ between students who did and did not identify as Aboriginal or Torres Strait Islander. Psychological distress also did not differ between students who did and did not identify as having a country of birth other than Australia, and who did and did not identify as a current carer. Students who identified as not having current housing satisfaction, not having current full-time employment, or having current financial stress reported greater psychological distress.

Bivariate associations between community (university) determinants and corresponding psychological distress values are shown in Table 2. Greater psychological distress was observed in students who reported not being socially included (mean difference [95% CI]: 2.13 [1.78, 2.47] points, $p < 0.001$), accepted (3.12 [2.66, 3.59] points, $p < 0.001$), or satisfied (3.35 [2.93, 3.77] points, $p < 0.001$) at university.

Multiple linear regression yielded a model for greater psychological distress that included (R^2 : 0.273, adjusted R^2 : 0.270, $p < 0.001$) having a current health condition, a lack of overall satisfaction at university, current financial stress, younger age, country of birth other than Australia, a lack of social inclusion at university, not having current housing satisfaction, LGBTQI+ identity, a lack of social acceptance at university, being a current carer, and not having current full-time employment (Table 3).

Table 3

Multiple Linear Regression Results: Retained Determinants of Mental Health and Psychological Distress (K-6 score) (Total N=3,581)

Measure	K-6 score, β (95% CI)	p -value
Current health condition	3.23 (2.85, 3.60)	<0.001
Overall satisfaction at university	-1.74 (-2.21, -1.28)	<0.001
Current financial stress	2.43 (1.99, 2.86)	<0.001
Age	-0.50 (-0.60, -0.41)	<0.001
Country of birth other than Australia	1.19 (0.84, 1.54)	<0.001
Social inclusion at university	-0.97 (-1.34, -0.59)	<0.001
Current housing satisfaction	-0.84 (-1.18, -0.51)	<0.001
LGBTQI+	0.96 (0.52, 1.40)	<0.001
Social acceptance at university	-0.82 (-1.32, -0.33)	0.001
Current carer	0.68 (0.04, 1.32)	0.038
Current full-time employment	-0.49 (-0.99, 0.00)	0.052

Note. Data are β (95% CI) and p -value.

Discussion

The current study examined associations between determinants of mental health and psychological distress among students at an Australian university to identify priorities for policy and practice action. A range of individual (student) and community (university) determinants of mental health were associated with psychological distress. Specifically, greater psychological distress was

associated with younger age, non-binary gender, LGBTQI+ identity, having a current health condition (including mental health problems), and experiencing financial stress. Conversely, lower psychological distress was observed in university students with current full-time employment and those who were satisfied with housing and felt included, accepted, and satisfied at university. Finally, multiple linear regression indicated being a current carer and being from a country of birth other than Australia may also be associated with greater psychological distress.

The findings highlight the need to address the social conditions that students experience. Particular attention needs to be given to economic factors, including financial stress, housing satisfaction, and employment, given the extensive literature identifying economic factors as determinants of poorer mental health (Alegria et al., 2023), including for university students within Australia (Cvetkovski et al., 2012). Moreover, Australia's economic situation has deteriorated since the completion of the survey in 2019, with high levels of inflation and poorer rental affordability increasing the risk of financial stress for those on low incomes (Agarwal et al., 2023; Tsiaplias & Wang, 2023). University students are disproportionately impacted by these economic pressures. It may be challenging for universities to address these factors directly. However, they have a key role in advocating for better government support and employment opportunities as well as more accessible housing to protect and promote the mental health of their students. In addition, these factors warrant consideration in the management of students presenting for counselling and other university supports.

Our findings suggest current full-time employment was associated with lower psychological distress. However, this finding should be interpreted with caution. Whilst employment can be a strong protective factor of psychological distress among university students (Cvetkovski et al., 2012), conflicts arising from the management of employment and university study concurrently are associated with a greater risk of burnout and reduced study engagement (Creed et al., 2022). Moreover, employed university students may miss classes and other learning activities due to employment commitments (James et al., 2007). Therefore, increased part-time employment opportunities should also be considered to allow students flexibility to balance competing demands.

The student mental health strategy of the university examined in the current study was informed by an integrated approach. In essence, its goals are: (1) protecting from modifiable harms, (2) promoting the mental health and wellbeing-favourable conditions of university life, and (3) responding to students showing signs of distress in a timely and non-discriminatory manner (Deakin University, 2023; LaMontagne et al., 2014). Accordingly, responsive elements need to be considered in concert with prevention. There is now moderately strong evidence that interventions for some common mental health disorders in university students are effective. For example, an umbrella review of meta-analyses for interventions in university students concluded that effective prevention and treatment options exist for depression, anxiety, and stress, with lesser evidence for effectiveness for other mental health issues (Cuijpers et al., 2021). In addition, there is some evidence that selective interventions in university students can be beneficial for addressing anxiety and depression (Barnett et al., 2021). Providing increased access and support to younger adults; current carers; those born outside of Australia; and those who identify as non-binary gender, LGBTQI+, or having a current health condition has the potential to meet the increased risks faced by these groups. This could be addressed in part through targeted strategies among these groups to improve access to, and the appropriateness of, supports and services. More fundamentally, universities also have a responsibility to create environments in which all students feel welcome, included, and supported, regardless of their identities, and to advocate for change in broader community values regarding inclusion. At the university level, this could be addressed in part through anti-stigma initiatives that aim to improve mental health literacy via education (e.g., university-level awareness campaigns regarding the commonality of mental health problems). Alternatively, contact-based (e.g., individual-level interactions, whether face-to-face or anonymous

via internet, that facilitate social connectivity) approaches may be engaged (LaMontagne et al., 2023; Walsh & Foster, 2021).

The current study was strengthened by the diversity of university students sampled, as reported elsewhere (LaMontagne et al., 2023) and the anonymity associated with the subjective reporting of psychological distress. However, the results should be interpreted in line with limitations. First, the cross-sectional design precludes causal inference, but our interpretation of specific associations as warranting policy and practice consideration is supported by other evidence. Second, our survey only achieved an overall response rate of 7.1% and, when compared to broader university census data (LaMontagne et al., 2023), our sample included more females, students with disabilities, and students aged >21 years of age. Further, we only sampled students from one university. Whilst the university of interest was large with geographically distributed campuses (including both metropolitan/rural and cloud/online students), generalisability to other Australian or international university cohorts may be limited. Fourth, we did not examine any societal or relationship determinants, per the socio-ecological model. Whilst determinants examined were selected pragmatically with scope to inform future university-based interventions, future studies could consider a broader range of determinants. Finally, the survey data analysed were collected before the COVID-19 pandemic and do not reflect changes that may have occurred since the 2019 survey.

Conclusions

A range of individual and community determinants of mental health were associated with psychological distress among university students in our sample. With an aim to reduce mental health disorders in this priority population group, future interventions may benefit from targeting financial stress, housing satisfaction, and employment status, as well as social inclusion, social acceptance, and overall satisfaction at university. Specific student groups that may benefit from these interventions include younger adults; current carers; those born outside of Australia; and those who identify as non-binary gender, LGBTQI+, or having a current health condition. These findings provide a rationale for the refinement of evolving student mental health strategies to assist universities in fulfilling their responsibility to provide safe, welcoming, and mental health-promoting environments for their students.

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Supplement

Supplement A. Questionnaire items utilised in current analysis

Individual (student) determinants

What is your age? [select one]

- 17-20 years
- 21-24 years
- 25-29 years
- 30-34 years
- 35-39 years
- 40-44 years
- 45-49 years
- 50+ years

How do you describe your gender identity? [select one]

- Female
- Male
- Non-binary

Do you identify as LGBTQI+? [select one]

- Yes
- No

Do you have a disability, medical condition and/or mental health condition? [select one]

- Yes
- No

Do you identify as Aboriginal or Torres Strait Islander? [select one]

- Yes
- No

Do you have carer responsibilities (for a child and/or an adult with a disability or health condition)? [select one]

- Yes
- No

The following questions are about your place of residence/where you live:

How satisfied are you with the quality of your place of residence/where you live? [select one]

- Very satisfied
- Satisfied
- Neutral
- Dissatisfied
- Very dissatisfied

How satisfied are you with the affordability of your place of residence/where you live? [select one]

- Very satisfied
- Satisfied

Neutral

Dissatisfied

Very dissatisfied

How satisfied are you with the distance between university and your place of residence/where you live? [select one]

Very satisfied

Satisfied

Neutral

Dissatisfied

Very dissatisfied

Are you currently employed full-time? [select one]

Yes

No

Over the past year, have any of the following happened to you because of a shortage of money?

Sought assistance from university financial assistance officer [select one]

Yes

No

Sought assistance from university student survival centre [select one]

Yes

No

Sought assistance from friends/family [select one]

Yes

No

Could not pay car registration/insurance [select one]

Yes

No

Went without meals [select one]

Yes

No

Pawned or sold something [select one]

Yes

No

Unable to pay rent/mortgage [select one]

Yes

No

Could not pay utility bills [select one]

Yes

No

Sought assistance from welfare/community organisations [select one]

Yes

No

Community (university) determinants

Thinking about your overall experience as a university student, how included/excluded do you feel at university? [select one]

Very included

Somewhat included
Neutral
Somewhat excluded
Very excluded

Thinking about your overall experience as a university student, how accepted/unaccepted do you feel at university? [select one]

Very accepted
Somewhat accepted
Neutral
Somewhat unaccepted
Very unaccepted

How satisfied are you with your experience as a university student overall? [select one]

Very satisfied
Satisfied
Neutral
Dissatisfied
Very dissatisfied

Supplement B. Unadjusted bivariate comparisons between individual (student) determinants of mental health and psychological distress (K-6 score) (Total N=3,581)

Measure	K-6 score, β (95%CI)	P-value
Age		
17-20 years vs 21-24 years	-0.26 (-0.98, 0.46)	0.957
17-20 years vs 25-29 years	0.07 (-0.71, 0.84)	>0.999
17-20 years vs 30-34 years	0.77 (-0.20, 1.74)	0.240
17-20 years vs 35-39 years	1.37 (0.24, 2.50)	0.006
17-20 years vs 40-44 years	1.79 (0.49, 3.10)	0.001
17-20 years vs 45-49 years	3.77 (2.28, 5.27)	<0.001
17-20 years vs 50+ years	2.24 (0.87, 3.61)	<0.001
21-24 years vs 25-29 years	0.33 (-0.43, 1.09)	0.897
21-24 years vs 30-34 years	1.03 (0.07, 1.99)	0.024
21-24 years vs 35-39 years	1.63 (0.51, 2.75)	<0.001
21-24 years vs 40-44 years	2.06 (0.76, 3.35)	<0.001
21-24 years vs 45-49 years	4.04 (2.55, 5.52)	<0.001
21-24 years vs 50+ years	2.50 (1.14, 3.86)	<0.001
25-29 years vs 30-34 years	0.71 (-0.30, 1.71)	0.394
25-29 years vs 35-39 years	1.30 (0.15, 2.46)	0.015
25-29 years vs 40-44 years	1.73 (0.40, 3.06)	0.002
25-29 years vs 45-49 years	3.71 (2.19, 5.22)	<0.001
25-29 years vs 50+ years	2.17 (0.78, 3.56)	<0.001
30-34 years vs 35-39 years	0.60 (-0.70, 1.89)	0.858
30-34 years vs 40-44 years	1.02 (-0.43, 2.47)	0.389
30-34 years vs 45-49 years	3.00 (1.38, 4.63)	<0.001
30-34 years vs 50+ years	1.47 (-0.04, 2.98)	0.064
35-39 years vs 40-44 years	0.43 (-1.13, 1.99)	0.991
35-39 years vs 45-49 years	2.41 (0.68, 4.13)	0.001
35-39 years vs 50+ years	0.87 (-0.74, 2.48)	0.729
40-44 years vs 45-49 years	1.98 (0.14, 3.82)	0.025
40-44 years vs 50+ years	0.44 (-1.30, 2.18)	0.994
45-49 years vs 50+ years	-1.54 (-3.42, 0.35)	0.210
Gender		
Female vs male	0.85 (0.40, 1.30)	<0.001
Female vs non-binary	-1.83 (-3.18, -0.49)	0.004
Male vs non-binary	-2.68 (-4.06, -1.31)	<0.001
Identify as non-binary		
Yes vs no	2.08 (0.96, 3.20)	<0.001
Identify as LGBTQI+		
Yes vs no	2.09 (1.65, 2.54)	<0.001
Current health condition		
Yes vs no	4.00 (3.66, 4.34)	<0.001
Aboriginal or Torres Strait Islander		
Yes vs no	1.00 (-0.36, 2.36)	0.150
Current carer		
Yes vs no	0.62 (-0.01, 1.25)	0.056
Country of birth other than Australia		
Yes vs no	0.20 (-0.15, 0.56)	0.265
Current financial stress		
Yes vs no	3.71 (3.28, 4.14)	<0.001

Current housing satisfaction		
Yes vs no	-2.02 (-2.38, -1.66)	<0.001
Current full-time Employment		
Yes vs no	-1.54 (-1.99, -1.09)	<0.001

Note. Data are β (95%CI) and P-value.