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ARTICLE

A scoping review of factors associated with Australian university student wellbeing

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Abstract: Universities have a social obligation to support student wellbeing. Given that university experiences differ across countries, synthesising student wellbeing research within specific national contexts can assist policy makers in identifying research most relevant to local students. A scoping review was conducted to (i) map the factors associated with Australian university student wellbeing, (ii) identify knowledge gaps, and (iii) assess the response rates reported in this literature. 160 studies were included in the review. Associations were reported between wellbeing and 242 different factors. Factors were thematically grouped into psychological, social, demographic, university-specific, lifestyle, aversive life-events, and work-related/financial categories. Several knowledge gaps were identified. These included: Inconsistent wellbeing measurement, non-representative sampling, limited understanding of university-specific factors, limited research identifying at-risk student groups, and absence of interventional studies addressing features of university environments or experiences. Excluding whole-of-university studies, the average response rate was 37.7%, although response rates were lower in online surveys (24.8%) and in studies recruiting whole-of-university samples (5.6%). In-class surveys received the highest response rates (57.3%). Further research is needed to address knowledge gaps identified in this review.

Keywords: wellbeing; higher education; mental health; university policy; scoping review

1. Introduction

University life presents a challenge to student wellbeing (Cleary et al., 2011). Longitudinal studies have consistently observed declines in student wellbeing (and related concepts) during the first year of undergraduate study (Andrews & Wilding, 2004; Bewick et al., 2010; Conley et al., 2020; Kroshus et al., 2021) and several studies have observed worse wellbeing among university students relative to non-student samples (Bore et al., 2016; Ibrahim et al., 2013; Larcombe et al., 2021; Leahy et al., 2010; Stallman, 2010). Poor university student wellbeing also predicts diminished academic performance and increased rates of university drop-out (Bruffaerts et al., 2018; Lipson & Eisenberg, 2018; Zając et al., 2024).

Logically, universities are ideally situated to support university students, for instance, by providing access to counselling or by creating university environments and curriculums which empower wellbeing (Larcombe et al., 2021; Stallman, 2012; Taylor et al., 2019; Upsher et al., 2023). In theory, universities wellbeing policies should aim to address and ameliorate factors that negatively impact students (Baik et al., 2019; Cleary et al., 2011; Jones et al., 2021). To construct such policies requires comprehensively understanding the factors associated with student wellbeing (Baik et al., 2019; Campbell et al., 2022; Kroshus et al., 2021; Pedrelli et al., 2015).

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University student wellbeing has been researched extensively. A 2020 scoping review mapped the academic literature relating to the stress and wellbeing of tertiary students worldwide (Linden & Stuart, 2020). The review noted many factors associated with student wellbeing, including challenges adjusting to university, academic stress, resilience, absence of social support, financial stress, and future uncertainty (Linden & Stuart, 2020). A 2022 review examined factors influencing poor mental health and wellbeing of students in the United Kingdom. This review identified loneliness and adverse childhood experiences as deleterious, while university belonginess, student engagement, social support, and resilience were protective factors (Campbell et al., 2022).

However, university systems and student experiences differ across national and cultural contexts, diminishing the generalisability of university student wellbeing research across countries (Bitsika et al., 2010; Hagel et al., 2012; Suárez Reyes & Van den Broucke, 2016). For example, Australia has unusually high proportions of international students (OECD, 2024) and unusually low rates of students living on-campus (CBRE, 2024), particularly compared to the United States where much of the existing research has been conducted (Linden & Stuart, 2020). Multinational studies have found disparities in levels of student wellbeing across national contexts, as well as differences in the strengths of various wellbeing predictors such as resilience, social support, and value-orientations (Li et al., 2022; Maercker et al., 2015; Turner et al., 2021).

As such, policy makers and researchers would benefit from syntheses of the student wellbeing research conducted within their particular national context. Such an exercise could summarise the existing literature in order to identify appropriate targets for university initiatives and ensure that university policies are sufficiently informed by existing empirical research (Barkham et al., 2019; Linden & Stuart, 2020). Furthermore, such a review could assist researchers by identifying relevant knowledge gaps and future research directions. This scoping review maps the literature conducted on the wellbeing of Australian university students; a similar review has previously been undertaken in the United Kingdom (Campbell et al., 2022).

Moreover, "wellbeing" is a complex concept with no unifying academic consensus regarding its definition (A. L. Dodd et al., 2021; Dodge et al., 2012). A recent review found significant heterogeneity in the conceptualisation and measurement of university student wellbeing in research conducted in the United Kingdom (A. L. Dodd et al., 2021). Lack of consistency in wellbeing measurement may diminish both the comparability between wellbeing findings and capacities to conduct meta-analyses of wellbeing research (Campbell et al., 2022; Linton et al., 2016; Upsher et al., 2022). Understand the factors relating to Australian university student wellbeing requires also examining how wellbeing has been defined and measured within Australian university contexts.

1.1 Response rates and non-response bias

Declining rates of survey response have been observed in both student and general populations across the past three decades (Brick & Williams, 2012; Fosnacht et al., 2017; Peytchev, 2012). Reluctance to participate in surveys has been theorised to stem from oversaturation of survey requests, perceived lack of benefits to completing surveys, and lack of trust in the motives behind surveys (Leeper, 2019; Tschepikow, 2012). Since surveys are commonplace in student wellbeing research, the Australian university student wellbeing literature may be susceptible to non-response bias, particularly if a student's wellbeing influences their decision to participate (Groves, 2006).

Online survey response rates appear to differ depending on the population being surveyed, with online surveys recruiting specific populations tending to produce higher response than

surveys on more general populations (Wu et al., 2022). Furthermore, survey contexts and formats may influence response rates, with an Australian study observing substantially higher response rates to in-class surveys relative to email (Steinmetz et al., 2020).

1.2 The current study

To date, there have been no systematic reviews of the factors associated with the wellbeing of Australian university students. The current study systematically reviewed the Australian university student wellbeing literature to answer the following questions:

1. What is the scope of the literature on factors associated with the wellbeing of Australian university students?
    a. Do there appear to be gaps within this literature?
    b. How has wellbeing been measured within this literature?
2. What are the typical response rates reported within this literature?
    a. Do any factors appear to influence student response rates?

2. Method

Scoping reviews allow for identification of key evidence and knowledge gaps within a body of research, as well as examination of how research is conducted within a given field (Munn et al., 2018). As such, a scoping review was identified as the most suitable approach with which to address our research goals. The current review followed the recommendations of the Joanne Briggs Institute Manual of Evidence Synthesis (Aromataris & Munn, 2020) and the reporting guidelines of the Preferred Reporting Items for Systematic Reviews and Meta-Analysis extension for Scoping Reviews Checklist (PRISMA-ScR) (Tricco et al., 2018). The review protocol was registered prospectively on the Open Science Framework on August 1st, 2022: https://osf.io/9h7wx/?view_only=98c791dd58a5467b86b0ba80cc00c537

2.1 Eligibility criteria

To meet inclusion criteria, papers needed to report original data from students enrolled at an Australian university at the time of data collection. Papers were included if they explicitly used the term "wellbeing" to describe a reported variable and if they reported at least one association between this 'wellbeing' variable and another variable. Quantitative, qualitative, mixed-methods and experimental papers were included. Quantitative associations were defined as statistical associations between a wellbeing outcome and another factor, typically as a correlation or regression coefficient. Qualitative associations were recorded whenever a qualitative paper explicitly described a factor as influencing wellbeing. Experimental designs were included if the intervention was explicitly intended to influence wellbeing. No restrictions were placed on the context of each study, provided participants were Australian university students. The search was limited to English language. No limits were placed on time of publication.

2.2 Information sources

To identify potentially relevant documents the following databases were searched: PSYCinfo, Medline, SCOPUS, and Web of Science.

2.3 Search strategy

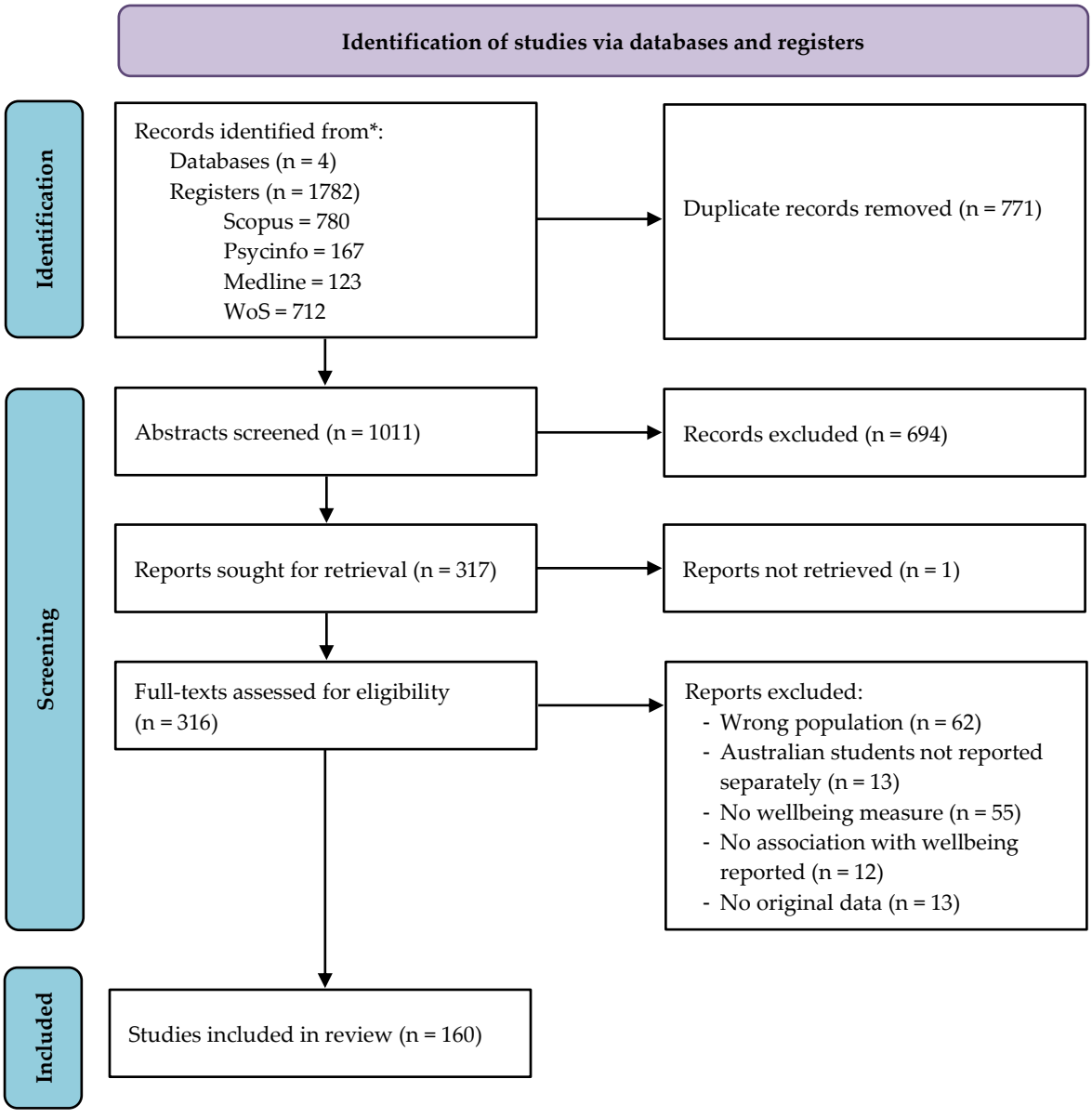
The search strategy was developed by a librarian and refined by the research team. The final search strategy is depicted in Figure 1 in Appendix 1. The most recent search was conducted on

August 24th, 2022. Search results were exported into Endnote and duplicates were removed. Following de-duplication, sources were uploaded onto Covidence. Grey-literature and reference lists were not searched due to the large number of sources retained at the end of second-pass screening.

2.4 Selection of the sources of evidence

To pilot first-round screening, titles and abstracts of the same 100 publications were screened by two reviewers. Once this pilot screening returned acceptable inter-rater consistency (>85%), the remaining 911 abstracts were screened by both reviewers. Conflicts were resolved by reviewer discussion. In total, 317 publications were selected for full-text screening, 1 of which could not be located. To pilot second round screening, each reviewer screened the same 20 full texts. Once this pilot screening returned acceptable inter-rater consistency (>85%), the remaining 296 full texts were screened by both reviewers. Conflicts were again resolved by discussion and 160 full texts were included in the review. See Figure 2.

Figure 2. *Prisma flow chart depicting the selection of relevant publications*



2.5 Data extraction

After identifying relevant publications, the following data were extracted from each paper. (1) Study characteristics: Year of publication, publication format, research design, study aims, wellbeing definition, wellbeing measures. (2) Sample characteristics: Sample size, response rate, characteristics of student participants, university location, recruitment strategy. (3) Study outcomes: Factors associated with wellbeing (including direction and significance where applicable), key findings. Data was recorded using Microsoft Excel.

3. Results

Out of 160 included papers, 92 used non-experimental quantitative methods, 29 used non-experimental qualitative approaches, 28 used experimental approaches and 11 used mixed methods approaches. Six papers were published before 2000, 16 between 2001-2010, 22 between 2011-2015, and 116 between 2016 and August 2022, indicating a growing interest in the field.

Australian university student wellbeing was examined in relation to 242 distinct factors. To synthesize the literature, factors were grouped conceptually into psychological, social, demographic, university-specific, lifestyle, work-related/financial, and aversive life-experiences. Psychological factors were further clustered into affect, personality, cognitive skills, cognitive styles, attitudes and beliefs, self-concept, motivation, and spirituality. Table 1 depicts the prevalence, direction, and significance of all identified quantitative associations (see Appendix 2). Table 2 depicts the prevalence and direction of all identified qualitative associations (see Appendix 2). Included studies have been assigned corresponding numbers (see List 1 in Appendix 3) for the complete numbered list.

3.1 Quantitative research into Australian university student wellbeing

3.1.1 Research design and sample characteristics

Of the 92 papers using non-experimental quantitative methods, 84 reported cross-sectional data and 8 longitudinal data. Eleven additional papers used mixed methods designs. Quantitative associations from mixed-method papers are reported in Table 1 (see Appendix 2).

Only two quantitative studies collected samples intended to be relatively representative of the whole Australian student base, either by recruiting from all Australian universities (Stallman et al., 2017) or from at least one university in each state (R. Dodd et al., 2021). One such study had a sample size of 787, 41% of whom were medicine and health students (R. Dodd et al., 2021). The other utilised archival baseline data collected by a wellbeing support website offered to all Australian university students (n = 6195, 91% domestic, 77% female) (Stallman et al., 2017). A third study recruited from 5 'major Australian universities' but did not provide a response rate or clarify whether these 5 universities were representative of the whole Australian student base (Usher & Curran, 2018).

Six studies attempted to recruit a whole institution's student base, primarily via student email lists (Larcombe et al., 2021; Liu et al., 2021; Merhej et al., 2022; Mulder & Cashin, 2015; Skromanis et al., 2018; Watson et al., 2015). As Table 5 depicts, these studies tended to report particularly low response rates.

The normative sampling approach was recruiting specific subsets of university students, usually from single institutions. Many studies sampled specific student groups on the logic that these groups had distinctive experiences that would not generalise to other student groups (e.g., Saikal et al., 2020). The main exceptions to this rule were samples of psychology students participating for course credit (e.g., Fullerton et al., 2021). Sampling by academic discipline was

the most common approach among quantitative studies (59 out of 92), with psychology (18), medicine (11), law (5) and nursing (3) students studied most often. Fourteen studies recruited first year students, often without clarifying whether this referred specifically to first-year undergraduates. Three papers solely recruited international students (Praharso et al., 2017; Rosenthal et al., 2008; Russell et al., 2010). In six cases the sample could not be qualified beyond the fact that participants were Australian university students.

3.1.2 Quantitative associations with Australian university student wellbeing

Quantitative studies have predominantly explored associations between wellbeing and various psychological concepts, most notably resilience, mindfulness and personality traits. The prevalence of research into psychological factors, often derived from prominent psychological models (e.g., The five-factor model, self-determination theory) indicates that quantitative research into Australian university student wellbeing has primarily been conducted within the psychological sciences. This is also indicated by over-representation of psychology student samples.

Positive social experiences and university belonging positively predicted wellbeing across a diverse range of samples. A smaller number of studies explored associations between family support and student wellbeing, with ongoing connections with family associated with increased wellbeing, although two studies found that autonomy from parents predicted greater wellbeing. No study specifically considered associations between romantic relationships and student wellbeing.

Various lifestyle factors were considered, with sleep quality most consistently predicting greater wellbeing. Hazardous lifestyle behaviours were studied infrequently but were typically associated with significantly worse wellbeing. Financial stress was consistently negatively associated with wellbeing across diverse samples.

Female gender was variably associated with either significantly poorer wellbeing or was not significantly different relative to male gender. Older age was typically associated with either better wellbeing or was not a significant predictor. Despite Australia having unusually high proportions of international students (OECD, 2024), the wellbeing of international and domestic students was only compared on four occasions with predominantly non-significant differences. Undergraduate students reported worse wellbeing than postgraduates in two studies. Only one study compared wellbeing between students of different academic disciplines, reporting worse wellbeing among law students relative to psychology students (Skead & Rogers, 2015). No studies compared the wellbeing of relocating and non-relocating domestic undergraduate students.

Quantitative associations between features of academic life and wellbeing were studied relatively infrequently. Academic stress predicted worse wellbeing across four large and diverse samples. Objective measures of academic performance were either positively or non-significantly associated with wellbeing, while satisfaction with academic performance consistently predicted greater wellbeing.

3.2 Qualitative research into Australian university student wellbeing

3.2.1 Study and sample characteristics

Twenty-nine papers used qualitative approaches, with 19 using one-on-one interview methods, 11 open-text response methods, and two using focus groups. Three papers incorporated both

interview and text-response data. Eleven additional papers used mixed methods designs, the qualitative results of which are reported in Table 2 (see Appendix 2).

Qualitative studies almost exclusively sampled specific student-groups from single-institutions, usually on the logic that these groups had distinctive experiences. Exceptions were three text-response studies, one which recruited a whole university sample (n = 2776) (Baik et al., 2019), one which recruited social work students from 29 universities (n = 2320) (Gair & Baglow, 2018) and another which recruited mature-age students from several regional universities (n = 1879) (Crawford et al., 2022). Seven qualitative studies specifically sampled international students. Four studies sampled medical students and three nursing students. Four studies qualitatively explored the experiences of first-year undergraduate students, all by the same author (e.g., Kahu et al., 2022).

3.2.2 Qualitative associations with Australian university student wellbeing

Whereas the quantitative research predominantly considered psychological factors, qualitative studies most often described interconnections between wellbeing and university-related experiences. Various student samples identified the negative influence of study/life imbalance and high academic workloads upon student wellbeing. Students highlighted high-quality, engaging teaching and general feelings of being supported academically as empowering wellbeing. The pain of loneliness and the buffering impact of positive social experiences and university belonging was identified by multiple student groups, as was the deleterious impact of financial stress.

3.3 Interventions addressing Australian university student wellbeing

Twenty-eight studies reported interventions designed to influence wellbeing, 21 using quantitative evaluation and seven qualitative. Amongst the quantitative approaches, eight used controlled designs, 11 compared pre and post intervention scores without a control and two studies conducted post-intervention only evaluations. Seven qualitative papers evaluated interventions using post-intervention feedback. See Table 3 in Appendix 2.

Once again, interventions were largely conducted within specific student groups, usually specific academic disciplines, the main exception being online interventions made available to large university cohorts (Chung et al., 2022; Simmons & Rman, 2018; Viskovich & Pakenham, 2020). Interventions predominantly entailed some variation of skills training intended to empower students to maintain wellbeing during university.

3.4 Measurement of wellbeing

Thiry-five different quantitative instruments were described as wellbeing outcomes. Additionally, 13 studies either used a novel wellbeing questionnaire or did not report their wellbeing instrument. Table 4 shows frequencies and descriptions of each instrument.

A number of studies used scales assessing 'positive' features only, notably the Satisfaction with Life Scale, Warwick Edinburgh Mental Wellbeing Scale, the WHO-5, and Ryff's Psychological Wellbeing Scale. Conversely, many studies used scales assessing negative features and interpreted the absence of negative experiences as indicating the presence of wellbeing. Measures used in this capacity included instruments designed to capture depression, anxiety, distress, stress, suicidal ideation, or indicators of psychiatric illness. The two scales most frequently used in this way were the Depression, Anxiety and Stress Scale (DASS) and the

General Health Questionnaire (GHQ). Positive measures were at times used in conjunction with 'negative' indicators to capture a broader range of experiences (e.g., van Agteren et al., 2019).

Multiple studies operationalised wellbeing using measures designed to assess concepts usually construed as wellbeing predictors rather than wellbeing outcomes. Concepts described as wellbeing indicators included self-esteem, optimism, purpose and meaning in life, engagement, emotional exhaustion, and burnout. These concepts were therefore interpreted as wellbeing predictors in some papers, and as wellbeing outcomes in others.

Table 4. *Quantitative instruments used to operationalise wellbeing in research on Australian university students*

Wellbeing Measure	Frequency	Constructs Assessed
Satisfaction with Life Scale (Diener et al., 1985)	21	Positive affect, negative affect, and life satisfaction.
Warwick Edinburgh Mental Wellbeing Scale	16	Positive mental health; positive affect, satisfying interpersonal relationships and positive functioning
(Tennant et al., 2007)	15	Negative emotional states; depression, anxiety and stress
Depression, Anxiety and Stress Scale (Lovibond & Lovibond, 1995)	13	Varied
Novel or Not Reported	13	Positive and negative affect
Positive & Negative Affect Scale (Watson et al., 1988)	9	Positive mental wellbeing
WHO-5 (World Health Organization, 1998)	8	Emotional, Social and Psychological Wellbeing
Mental Health Continuum – Short Form (Keyes, 2005)	8	Presence of psychiatric illnesses
General Health Questionnaire (Goldberg, 1972)	7	Various domains of life satisfaction
Personal Wellbeing Index (International Wellbeing Group, 2024)	7	Autonomy, environmental mastery, personal growth, purpose in life, positive relations with others, self-acceptance
Ryff's Psychological Wellbeing Scale (Ryff, 1989)	3	State and trait anxiety
State Trait Anxiety Scale (Spielberger et al., 1983)	2	Psychological Distress
Kessler Psychological Distress Scale 10 (Kessler et al., 2002)	2	Positive wellbeing, self-control, anxiety and depression, vitality and general health concerns
Psychological General Well-Being Index (Dupuy, 1984)	2	Self-esteem, happiness, and optimism
Trait Emotional Intelligence Questionnaire - Wellbeing Dimension (Petrides et al., 2009)	2	Distress and wellbeing
Mental Health Inventory (Veit & Ware, 1983)	2	Self-Esteem
Rosenberg Self-Esteem Scale (Rosenberg, 1979)	2	Depressive symptoms
Centre for Epidemiological Depression Scale (Radloff, 1977)	2	Positive and negative emotions

Table 4. *Quantitative instruments used to operationalise wellbeing in research on Australian university students (Cont.)*

Wellbeing Measure	Frequency	Constructs Assessed
Subjective Happiness Scale (Lyubomirsky & Lepper, 1999)	2	Subjective happiness
Meaning in Life Questionnaire (Steger et al., 2006)	2	Presence of meaning in life; search for meaning in life
Consumer Based Wellbeing Scale (Sirgy et al., 2008)	1	Consumer wellbeing
The Flourishing Scale (Diener et al., 2010)	1	Positive relationships, self-esteem, purpose and optimism
Beck Hopelessness Scale (Beck et al., 1974)	1	Hopelessness
Suicidal Ideation Questionnaire (Reynolds, 1988)	1	Suicidal thoughts
Life Orientation Test Revised – Optimism Sub-Scale (Scheier et al., 1994)	1	Optimism
Everyday Feeling Questionnaire (Uher & Goodman, 2010)	1	Psychological wellbeing and distress
Wellbeing Manifestations Measures Scale (Massé et al., 1998)	1	Control of self and events, happiness, social involvement, self-esteem, mental balance and sociability
Comprehensive Quality of Life Scale (Cummins, 1993)	1	Material wellbeing, health, productivity, intimacy, safety, place in the community and emotional wellbeing
Student Life Stress Inventory (Gadzella & Baloglu, 2001)	1	Causes and reactions to stress
Student Version of Utrecht Work Engagement Scale (Schaufeli et al., 2002)	1	Student engagement – absorption, dedication and vigour
Student Version of Oldenburg Burnout Inventory (Reis et al., 2015)	1	Exhaustion and Disengagement
Maslach Burnout Inventory (Maslach & Jackson, 1981)	1	Emotional Exhaustion
Goldberg Anxiety and Depression Scale – Anxiety sub-scale (Goldberg et al., 1988)	1	Anxiety
Abbreviated World Health Organisation Quality of Life Questionnaire (Murphy et al., 2000)	1	Physical and Psychological Functioning
Symptoms Checklist-90 Revised – General Severity Index (Derogatis, 1994)	1	Psychological distress – depression, anxiety and hostility
Adult Manifest Anxiety Scale – College Version (Reynolds et al., 2003)	1	Anxiety – physiological anxiety, social concerns/stress, test anxiety, worry/over sensitivity and lie/validity

3.5 Response rates

Forty-one papers provided interpretable response rates, see Table 5. Treating all studies as one sample, the average response rate overall was 12.6%. Omitting studies recruiting whole

institutions, which had very large target populations, the overall combined response rate was 37.7%.

Studies recruiting from populations of <1000 students (29 of 41) had an average combined response of 42.4%. Studies sampling from populations between 1000-10000 (7 of 41) had an average combined response of 27.2%. Studies recruiting from populations > 10000 (3 of 41) had an average combined response of 5.1%.

Thirty-eight papers reported response rates and recruitment methods. On average, the highest response rates were returned by studies conducted during lectures or tutorials (n = 8, Mean combined response rate = 57.3%, Range = 43-91%). Five studies used mail-back survey methods, the most recent published in 2008 (Mean combined response rate = 46%, Range = 20-73%). The most common recruitment method involved using student email lists to disseminate online survey links. The total combined response rate was 7.7% (n = 19, Range = 4.7-77%), although this increases to 24.8% when omitting whole university studies.

Thirty-seven papers provided response rates for studies conducted on sub-sets of students within the broader population (Mean combined response rate = 37.7%, Range = 11 - 91%). Four studies attempted to recruit entire university student populations via student email lists (Mean combined response rate = 5.6%, Range = 4.7 - 9.1%).

Table 5. *Response rates reported by studies on the wellbeing of Australian university students*

Authors	Year	Recruitment Strategy	Student Characteristics	Sample Size/ Response Rate
Nielsen et al.	2016	Survey during class	Postgraduate Business	143 (91%)
Innes	2016	Survey during class	Chiropractic	194 (82%)
Saikal et al.	2020	Not Reported	Medical	644 (81.7%)
Turner et al.	2019	Survey during class	Construction Management	183 (80-90%)
Bye et al.	2020	Survey during class	First-Year	342 (80%)
Pekerti et al.	2020	Student Email	International Business	863 (77%)
Gho & Kim	2020	Not Reported	Hotel Management	60 (75%)
Cameron et al	2022	Survey during class	Undergraduate Nursing	113 (74%)
Condon et al.	1995	Mail-Back	Female	146 (73%)
Harth et al.	1992	Not Reported	Medical	403 (72.4%)
King et al.	2016	Survey During Class & Student Email	Medical	454 (68%)
Winefield	1993	Mail-Back	Mature Age	568 (67%)
Hodge et al.	2020	Student Email	Social Work	60 (60%)
Vollmer-Conna et al.	2020	Student Email	Medical	151 (56%)
Hassed et al	2009	Not Reported	First-Year Medical	148 (55%)
Middleton et al.	2021	University Platforms and Social Media	Nursing	693 (46.5%)
Moxham et al.	2018	Survey during class	Nursing	920 (46%)
Rosenthal	2008	Mail-Back	International	979 (44%)
Cotto et al.	2002	Mail-Back	Second-Year	176 (43%)
Russel et al.	2010	Not Reported	International	979 (43%)
Turner et al.	2017	Survey during class	Built Environment	410 (43%)
Johnson	2015	Student Email	Psychology	58 (41%)
Lyons et al.,	2020	University Online Platforms and Social Media	Medical	297 (37.5%)

Table 5. *Response rates reported by studies on the wellbeing of Australian university students (Cont.)*

Authors	Year	Recruitment Strategy	Student Characteristics	Sample Size/ Response Rate
McNulty et al.	2015	Student Email & Lecture Presentation	First-Year Radiology	59 (37%)
Blevins et al.	2022	Student Email	Dance	76 (36%)
Hearn et al.	2019	Student Email	Indigenous	69 (33%)
Skead et al.	2020	Online Invitation	Law	225 (30%)
Ramagoolam-Atchiamith et al.	2022	Student Email	Hospitality	195 (25%)
Pakenham & Viscovich	2018	Student Email	Psychotherapy	125 (24%)
Wrench et al.	2014	Not Reported	First Year Health Science	132 (23%)
Rasmussen et al.	2022	Student Email (One Reminder)	Nursing and Midwifery	637 (22%)
Skead & Rogers	2014	Student Email	Law	206 (20%)
Steward & Podbury	2003	Mail-Back	First-Year	142 (20%)
Rogers et al.	2010	Posters on Campus	Medical	179 (18%)
Van Agteren et al	2019	Student Email, Newsletter Promotion & Announcements in Lectures	Education, Psychology and Social Work	905 (16.1%)
McKay et al.	2021	Student Email	Education	60 (11%)
Bynes et al.	2020	Student Email, Flyers & Social-Media	Medical	69 (11%)
Skromanis et al.	2018	Student Email, Lottery, Flyers, Social-Media & SMS Reminder	Whole University	1395 (9.1%)
Watson et al.	2015	Student Email & Online Portal Advertisement	Whole University	614 (9%)
Mulder & Cashin	2015	Student Email	Whole University	609 (5.1%)
Liu et al.	2021	Student Email (Five Reminders)	Whole University	3793 (4.7%)

4. Discussion

This review of research into Australian university student wellbeing contributes to the literature in several ways. Primarily, this synthesis can help guide future researchers and policy makers by summarising the existing literature on factors associated with university student wellbeing and identifying gaps within the evidence base. Additionally, this review provides insights into potential approaches for improving wellbeing survey response rates within this field.

4.1 Factors associated with Australian university student wellbeing

To support students effectively requires university policies informed by robust understandings of the factors associated with student wellbeing (Baik et al., 2019; Campbell et al., 2022; Pedrelli et al., 2015). In line with scoping review methodology, this review first aimed to summarise the current state of the literature (Munn et al., 2018).

Our review included 160 papers reporting associations between wellbeing and 242 distinct factors. Australian university student wellbeing has been studied using a diverse range of

research methodologies, although cross-sectional quantitative designs are most prevalent. Furthermore, 28 studies reported on interventions intended to influence the wellbeing of Australian university students, although only eight used controlled designs.

Encouragingly, the breadth of the literature reveals a large existing evidence base which could theoretically inform university policy. By tabling this literature, this review can assist researchers and policy makers in identifying research relevant to their particular goals. For example, policy makers interested in potentially manipulable features associated with wellbeing can access a multitude of Australian papers studying psychological factors such as resilience (Fullerton et al., 2021), mindfulness (Bergin & Pakenham, 2016), self-control (Bore et al., 2016), and self-esteem (Hoffmann et al., 2020). Policy makers interested in reforming aspects of university social environments can refer to papers investigating the protective elements of social support (Praharso et al., 2017) and the deleterious effects of loneliness (Dingle et al., 2022; Liu et al., 2021) and so forth. Such empirical insights help clarify appropriate targets for university intervention (Campbell et al., 2022). However, the tendency towards cross-sectional research limits capacity for causal inferences and early identification of vulnerable students (Brown, 2018).

Studies exploring relationships between wellbeing and university specific factors are likely of particular interest to university policy makers. Significant associations were reported between wellbeing and concepts such as university belongingness (Dingle et al., 2022; Larcombe et al., 2021), satisfaction with academic performance (Russell et al., 2010), feelings of teacher and supervisor support (Nielsen et al., 2017; Saikal et al., 2020), academic workloads (Skead & Rogers, 2014) and study-life imbalance (Bergin & Pakenham, 2015) across a broad range of student groups. While correlational, the consistent statistical significance of these associations speaks to the interconnected relationship between university life and Australian student wellbeing. Furthermore, qualitative feedback indicated a clear tendency for students to perceive wellbeing and university experiences as closely intertwined (Baik et al., 2019; Kahu et al., 2022). This supports the theory that student wellbeing could be improved by university initiatives that directly address university environments and experiences (Baik et al., 2019; Jones et al., 2021; Upsher et al., 2023). However, as expanded below, further research is needed to extend understandings of how university-specific factors shape wellbeing.

4.2 Knowledge gaps and future research directions

This review also sought to identify knowledge gaps and directions for future research. While Australian university student wellbeing has been studied extensively, the practical utility of this literature is constrained by several knowledge gaps. Recognition of these knowledge gaps can guide future research.

4.2.1 Inconsistent wellbeing measurement

We observed substantial heterogeneity in wellbeing measurement. This finding aligns closely with a previous scoping review of university student wellbeing research conducted in the United Kingdom (A. L. Dodd et al., 2021). Australian university student "wellbeing" has often been measured using psychometrics designed to capture negative psychological experiences (e.g., stress, depression, anxiety, distress). This directly contradicts the well supported view that wellbeing represents more than the absence of negative psychological experiences (Iasiello et al., 2020). Wellbeing is also at times measured using psychometrics capturing concepts more typically construed as wellbeing predictors (e.g., self-esteem, engagement, burnout) or via novel or undefined measures. Furthermore, qualitative papers frequently do not define wellbeing, introducing further ambiguity when interpreting qualitative associations.

Therefore, while Australian university student wellbeing has been studied widely, what "wellbeing" means can vary substantially. This heterogeneity of measurement complicates the task of comparing "wellbeing" findings (Barkham et al., 2019; A. L. Dodd et al., 2021; Linton et al., 2016; Upsher et al., 2022). To illustrate, we observed one positive and one non-significant association between openness to experience and wellbeing, indicating a mixed finding. However, considering the wellbeing measures used, we could alternatively report openness to experience as negatively associated with psychological illness in one study (Creed & Evans, 2002) and non-significantly associated with positive affect in another (Rogers et al., 2012).

Inconsistent wellbeing measurement has recently prevented multiple attempts to conduct meta-analyses of university student wellbeing literature within other research contexts (Campbell et al., 2022; Upsher et al., 2022). Our review indicates that meta-analyses of the Australian university student wellbeing literature may also be impracticable due to heterogeneity in measurement. To expand the practical utility of the evidence base, future research should pursue greater consensus in the definition and measurement of the wellbeing of Australian university students (Barkham et al., 2019; A. L. Dodd et al., 2021).

4.2.2 Inconsistent and non-representative sampling

Furthermore, inconsistent and non-representative sampling pervades the literature. Ideally Australian university policymakers and researchers would have access to data from samples which are representative of Australian university students as a whole. However, only two identified studies aspired towards representative 'Australian' samples (R. Dodd et al., 2021; Stallman et al., 2017) while whole university studies were published infrequently.

The Australian university student wellbeing literature is instead comprised primarily of studies sampling specific student groups, usually from single institutions. Troublingly, levels and predictors of wellbeing (and related concepts) can differ significantly between student groups (Allen et al., 2022; Erekson et al., 2023; Lipson et al., 2016; McLafferty et al., 2022) and across institutional contexts (Eisenberg et al., 2013; Skead et al., 2020). This calls into question the validity of generalising wellbeing findings collected from specific student groups to broader populations.

Moreover, some student groups are over-represented, while others are under-represented. Sample of students from specific academic disciplines were most prevalent, with psychology and medicine students accounting for 49% of quantitative papers using this approach. The literature, therefore, disproportionately reflects the experiences of students from these disciplines. Comparatively, students from high enrolment disciplines such as business, arts and social science, and engineering are scarcely represented. The paucity of studies sampling arts students is particularly concerning given overseas research indicating that arts students may be especially at-risk of poor wellbeing (Allen et al., 2022; Erekson et al., 2023; Lipson et al., 2016; McLafferty et al., 2022).

Future research should pursue a more representative evidence base, both by recruiting whole-university, or ideally nationally representative samples, and by researching the wellbeing of currently under-represented student groups. Research comparing wellbeing between different institutions can help establish the degree to which wellbeing approaches should be tailored to specific institutional contexts (Eisenberg et al., 2013). Researching under-represented academic disciplines is important both to rectify the omission of these groups from the existing literature, and to inform tailored wellbeing policies implemented at the discipline or school level (Baik et al., 2019; Jones et al., 2021; McLafferty et al., 2022). Notably, one study collected text-response feedback from 2320 social work students across 22 Australian universities. This provided

student-driven insights into targets for discipline specific intervention (Gair & Baglow, 2018). The same approach could be employed within other disciplines.

4.2.3 Under-researched concepts and research questions

This review also helps identify under-researched concepts. In general, the absence of concepts from our synthesis can indicate areas warranting further enquiry. For instance, relationships between drug and alcohol use and Australian university student wellbeing have scarcely been studied.

4.2.3.1 Need for further research into interconnection between university experiences and wellbeing

As aforementioned, universities are most able to influence student's university experiences, meaning that robustly understanding how university life shapes student wellbeing is essential for informing university wellbeing policy (Baik et al., 2019; Campbell et al., 2022; Pedrelli et al., 2015; Riva et al., 2020). While qualitative studies have consistently focused on university-specific experiences, university-specific factors have received comparatively less attention from quantitative Australian researchers. Qualitative studies have also typically focused on the experiences of very specific student groups. Therefore, further research, both quantitative and qualitative, is required to extend understandings of how university-specific factors influence wellbeing.

To highlight an exemplar, one recent study observed that, while 'academic stress' negatively predicts wellbeing, the specific elements of university life which cause academic stress were not well understood. The study recruited a whole university sample to attempt to delineate the features of coursework experiences that predict both academic stress and wellbeing. This helped to identify appropriate and specific targets for university intervention (Larcombe et al., 2021). Further research in this vein is required to provide practical insights into ways universities could reform university experiences to better support student wellbeing.

4.2.3.2 Need for further research into interventions that support wellbeing by addressing features of university life

A qualitative whole-of-university study (n = 2776) reported that students most often felt their wellbeing could be improve by initiatives that directly address university experiences. Student requests included greater clarity and guidance surrounding assessment requirements and feedback, increased teacher empathy and approachability, and redesigning classroom environments to allow greater interaction with peers (Baik et al., 2019). However, in direct contrast to these recommendations, none of the 28 interventional studies included in this review attempted to reform university approaches to create more supportive university environments. Interventions tended to either teach students techniques for managing the stress of university on a relatively individual level (e.g., psychoeducation), or to provide distractions from university stressors (e.g., canine therapy), rather than attempting to reduce the inherent stress of university life (Larcombe et al., 2021). Whether Australian university student wellbeing could be supported by reforms to foundational university experiences, such as academic demands and social environments, is yet to be evaluated. A similar dearth of studies directly addressing features of university life has been identified in overseas research (Upsher et al., 2022). This represents a key knowledge gap which future researchers should seek to address. The relative scarcity of interventional studies using controlled designs also speaks to a need for more gold-standard research into student wellbeing interventions.

4.2.3.3 Limited understanding of at-risk student groups

In addition, this review found surprisingly few studies investigating whether wellbeing varies systematically between different groups of Australian students. While this is partly due to aforementioned tendencies to recruit specific sub-sets of students, studies sampling broad ranges of students often opted not to disaggregate wellbeing data across student groups. Notably, the wellbeing of students from different academic disciplines was only compared on one occasion (Skead et al., 2020). Future researchers should examine whether particular groups of Australian students tend to be at-risk of poor wellbeing and therefore likely to benefit most from targeted support (McLafferty et al. 2022). Furthermore, future research could explore whether the factors predicting wellbeing differ between different student groups. This would provide insights into tailoring wellbeing support to the specific needs of specific student groups (Baik et al., 2019).

4.3 Response rates in Australian university student wellbeing literature

Concerns have been raised over the potential for non-response bias to diminish the external validity of survey research (Brick & Williams, 2012; Reyes, 2020). We observed an average combined response rate of 12.6% when including whole university samples and 37.7% when excluding these samples. The 37.7% result is similar to two recent meta-analyses, one reporting a 44% average response rate for online surveys conducted in the worldwide education sector from 2007-2014 (Wu et al., 2022), and another reporting an 49% average response rate for online surveys of undergraduate students in papers published in four major journals between 2007-2015 (Poynton et al., 2019). However, the average response rate for email delivered surveys (excluding whole-university studies) was 24.8% which falls substantially below these two existing syntheses.

Whole-of-university samples received substantially lower average response rates (5.6%) than research conducted within specific student cohorts (37.7%). This aligns with previous research suggesting that response rates are higher when target populations are more specific and personalised (Wu et al., 2022). Australian university students appear far more willing to participate in surveys perceived as relevant to their personal experience. Researchers recruiting specific sub-sets of student populations might be advised to emphasise the personal relevance of the research to potential participants.

The especially low response rates received by whole-university surveys are alarming as key future research directions, such as acquiring representative Australian datasets and identifying at-risk student groups, require collecting wellbeing data from large and diverse student populations. Furthermore, this low response rate calls into question the external validity of existing whole-university studies.

Therefore, improving response rates to large scale university wellbeing surveys is a key challenge for future researchers. One approach might be to leverage the high response rates received by in-class surveys. In-class surveys had the highest response rate of any recruitment method (57.3%). This aligns with a previous Australian study which reported a response rate of 5% to an email survey increasing to 45% when the same survey was conducted during lectures (Steinmetz et al., 2020). Australian university students appear more willing to participate in research in classroom contexts compared to online, perhaps due to oversaturation of email survey requests (Leeper, 2019; Steinmetz et al., 2020; Tschepikow, 2012).

A 2020 study included in this review described an intriguing approach to sampling incoming first-year undergraduates. Whereas conventional recruitment would be enacted via bulk email, the researchers instead identified specific tutorials that approximated a representative first-year sample and conducted surveys during these classes with an 80% response rate (Bye et al., 2020).

Using similar targeted in-class approaches could provide a solution to acquiring representative samples while avoiding contributing to oversaturation of bulk-email survey requests. However, care would need to be taken to ensure that such data collections were conducted ethically.

4.4 Summary of implications for university policy

Previous researchers have observed a tendency for university policy to be enacted without thorough grounding in the empirical evidence base (Barkham et al., 2019). At a general level, by synthesising and tabling this literature, we hope this review can help policy makers to expediently identify research relevant to their particular policy aims.

A clear policy direction is that universities need to invest in expanding the knowledge base on the factors underlying student wellbeing. Such investment is essential for ensuring the academic evidence base is sufficiently developed so as to provide practically useful recommendations for university wellbeing policies (Barkham et al., 2019). This review has identified several further research directions which would have clear policy implications. For instance, more comprehensively understanding which Australian student groups are at-risk of poor wellbeing could assist in determining the appropriate allocation of limited university resources. Furthermore, a clear omission from the existing research is the absence of studies evaluating whether wellbeing can be improved by changing university experiences and environments. This represents a critical direction for future Australian university wellbeing initiatives.

4.5 Limitations

This review has several limitations. Firstly, studies were only included if they used the term "wellbeing" in their title or abstract. Considering the tendency to use terms such as "mental health", or "mental illness" interchangeably with "wellbeing", we may have missed relevant studies that opted not to write "wellbeing" in their abstracts.

Secondly, given the number of included studies, we did not search reference lists or grey literature. Consequently, we may have missed potentially relevant sources. By only reviewing published literature the review may also be susceptible to publication bias.

Thirdly, as this was a scoping review, we did not assess the methodological quality of included sources. While this review summarises the Australian university student wellbeing literature, we are unable to comment on the overall quality of the research in this field. A future systematic review would be required to assess the empirical quality of the research (Munn et al., 2018).

Finally, this review considered associations between different factors and wellbeing. In the quantitative literature these associations were typically zero-order correlations or regression coefficients. A variable being significantly associated with wellbeing does not mean this factor causally affects wellbeing, nor that addressing this factor will necessarily impact student wellbeing.

5. Conclusion

To our knowledge, this is the first systematic review of factors associated with Australian university student wellbeing. This scoping review found both a large existing literature and a need for ongoing research to address gaps within the knowledge base. This review also provides insights into potential approaches for improving survey response rates in studies of Australian university student wellbeing.

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Appendices

Appendix 1

Figure 1. *Search strategy as in Scopus*

	Search Terms
Population	College Student*, OR Undergraduate Student*, OR Postgraduate Student*, OR University Student*, OR Higher Education, OR Medical Student* OR International Student*, OR Post-Secondary Education, OR Tertiary Education
AND	
Concept	Wellbeing, OR Well-Being OR "Well Being"
AND	
Context	Australia*

Appendix 2

Table 1. *Quantitative associations between wellbeing outcomes and other factors in studies conducted on Australian university student samples*

Concept *Sub-Concept* Associated Factor	Direction & Significance	Studies	Student Characteristics (sample size)
Psychological Factors			
Affect			
Stress	Negative	3, 5, 25, 31, 38, 45, 59, 64, 88, 160	Law (481), Dance (72), First-Year (1239), First-Year (447), Education (257), Whole University (731), Undergraduate (218), First-Year International (79)
Depression	Negative	3, 31, 39, 59, 64	Law (481), First-year (447), Residential College (171), Whole University (731), First-Year International (79), Psychology (518)
Distress	Negative	7, 25, 61	Psychology (150), First-Year (1239), Whole University (609)
Anxiety	Negative	3, 31, 59	Law (481), First-Year (447), Whole University (731)
Bipolar Features	Negative	20	First-Year Undergraduate (238)
Shame/Guilt	Negative	35	Psychology (100)
Personality			
Resilience	Positive	7, 8, 20, 29, 66, 71, 81, 82, 83, 87, 89	Psychology (150), Medical (127), First-Year Undergraduate (238), Psychology (305), Hospitality (195), International (979), Project Management (292), Project Management (183), Built Environment (410), Aged 18-25 (614), Aged 24-26 (568)
Dispositional Mindfulness	Positive	3, 5, 23, 38,59	Law (481), Dance (72), Whole University (238), Education (257), Whole University (731)

Neuroticism	Negative	6, 20, 29, 48, 52, 67	Female Nursing (60), First-Year Undergraduate (238), Psychology (305), Psychology (437), Undergraduate (163), Medical (755)
Conscientiousness	Positive	20, 29, 48, 67, 86	First-Year Undergraduate (238), Psychology (305), Psychology (437), Medical (755), Fourth-Year Medical (151)
Extraversion	Positive	20, 29, 48, 67	First-Year Undergraduate (238), Psychology (305), Psychology (437), Medical (755)
Agreeableness	Positive	20, 29, 48	First-Year Undergraduate (238), Psychology (305), Psychology (437)
	Non-Significant	67	Medical (755)
Openness to Experience	Positive	20	First-Year Undergraduate (238)
	Non-Significant	67	Medical (755)
Optimism	Positive	63, 88	Psychology (156), Psychology (518)
Schizotypy	Negative	1	Psychology (139)
Proactive Personality	Positive	13	Employed (401)
Intellect	Positive	29	Psychology (305),
Spirituality	Positive	30	Students with disability (274)
Tenacity	Positive	30	Students with disability (274)
Adaptability	Positive	30	Students with disability (274)
Perfectionism	Negative	42	Chiropractic (194)
Narcissism	Non-Significant	48	Psychology (437)
Cynicism	Negative	50	Whole-University (216)
Maladaptive Perfectionism	Negative	56	Not provided (215)
Adaptive Perfectionism	Positive	56	Not provided (215)
Cognitive Skills			
Self-Control	Positive	7, 8, 19, 30	Psychology (150), Medical (127), Second-Year Undergraduate (176), Students with disability (274)
Music as Coping Strategy	Positive	90, 91	First-Year Undergraduate (402), First-Year Undergraduate (465)
Time Management	Positive	12	Not Provided (111)
Perceived Control over Time	Positive	12	Not Provided (111)
Stress Management	Positive	30	Students with disability (274)
Negative Attributional Style	Negative	33	Psychology (127)
Cognitive Reappraisal	Positive	34	Psychology (85)
Expressive Suppression	Negative	34	Psychology (85)
Emotion Oriented Coping	Negative	42	Chiropractic (194)
Task Oriented Coping	Non-Significant	42	Chiropractic (194)
Emotional Intelligence	Positive	50	Whole University (216)
Low Efficacy	Negative	50	Whole University (216)
Goal Attainment	Positive	92	Psychology (159)
Sustained Effort	Positive	92	Psychology (159)

Cognitive Styles, Attitudes and Beliefs			
Cognitive Engagement	Non-Significant	9, 65	Business (952), First-Year Undergraduate (195),
Dysfunctional Beliefs	Negative	16	Not Provided (457)
Rumination	Negative	17	Psychology (163)
Difficulty Identifying Emotions	Negative	17	Psychology (163)
COVID Fear	Negative	18	Domestic (154)
Future Anxiety	Negative	26	Whole University (787)
Victimisation	Negative	33	Psychology (127)
Negative Attributional Style	Negative	33	Psychology (127)
Vertical Individualism	Negative	41	Whole University (507)
Horizontal Individualism	Non-Significant	41	Whole University (507)
Horizontal Collectivism	Positive	41	Whole University (507)
Vertical Collectivism	Non-Significant	41	Whole University (507)
Stress Mindset	Negative	45	Undergraduate (218)
Stress Control Mindset	Positive	45	Undergraduate (218)
Positive Feelings about Marriage	Positive	53	First-year Psychology (240)
Reluctance to seek help	Negative	54	Medical (92)
Psychological Capital	Positive	62	Postgraduate Business (143)
Balanced Time Perspectives	Positive	63	Psychology (156)
Future Anticipation	Positive	63	Psychology (156)
Psychological Barriers	Negative	73	First-Year (306)
Goal Clarity	Positive	80	First-Year Psychology (128)
Need Satisfaction	Positive	92	Psychology (159)
Psychological Inflexibility	Negative	106	Third-Year Psychology (125)
Stigma Consciousness	Negative	126	International Business (863)
Self-Concept			
Self-Esteem	Positive	39, 65	Residential College (171), First-Year Undergraduate (195)
Self-Compassion	Positive	63, 76	Psychology (156), Law (206)
Threats to Self-Concept	Negative	14	Not Provided (122)
Short Term Self-Concept Inconsistency	Negative	14	Not Provided (122)
Self-Actualisation	Positive	15	Social Sciences (122)
Value Congruence	Positive	35	Psychology (100)
Satisfaction with Personal Appearance	Positive	53	First-Year Psychology (240)
Self-Acceptance	Positive	58	Undergraduate (203)
Self-Kindness	Positive	78	Whole-Australia (6195)
Self-Other Match	Non-Significant	88	Psychology (518)
Self-Concordance	Positive	92	Psychology (159)

Motivational Factors			
Autonomy	Positive	10, 15, 24, 80	Psychology (364), Social Sciences (122), Not Provided (127), First-Year Psychology (128)
	Non-Significant	128	First-Year Undergraduate (142)
Relatedness	Positive	11, 15, 24, 30	First-Year Undergraduate (342), Not Provided (122), Not Provided (127), Students with disability (274)
Competence	Positive	15, 24, 72	Social Sciences (122), Not Provided (127), Medical (644)
Intrinsic Motivation	Positive	2	First-Year Undergraduate (184)
Extrinsic Motivation	Non-Significant	2	First-Year Undergraduate (184)
Amotivation	Negative	2	First-Year Undergraduate (184)
Autonomous Motivation	Positive	47	Whole University (4575)
Spirituality			
Meaning in Life	Positive	2	First-Year Undergraduate (184)
Mindful Awareness	Non-Significant	58	Undergraduate (203)
Being Present	Positive	78	Whole Australia (6195)
Social Factors			
Social Support / Positive Relationships	Positive	8, 10, 11, 19, 39, 49, 58, 64, 74, 78, 86, 88	Medical (127), Psychology (364), First-Year Undergraduate (342), Second-Year Undergraduate (176), Residential College (171), Whole University (3797), Undergraduate (203), First-Year International (79), Law & Psychology (188), Whole Australia (6195), Fourth-Year Medical (151), Psychology (518)
Social Isolation / Loneliness	Negative	4, 25, 43, 46, 49, 71, 72	Law (481), First-Year (1239), Medical Students (619), Medical (454), Whole University (3797), International (979), Medical (644)
Social Interactions	Positive	7, 8, 24, 48, 70, 76	Psychology (150), Medical (127), Not Provided (127), Psychology (437), First-Year Domestic Undergraduate (749), Law (206)
Social Status	Positive	11, 26, 29, 70	First-Year Undergraduate (342), Whole Australia (787), Psychology (305), First-Year Domestic Undergraduate (749)
Group Identification	Positive	39, 54, 64	Residential College (171), Medical (92), First-Year International (79)
Family Support	Positive	13, 62	Employed (401), Postgraduate Business (143)
Autonomy from Parents	Positive	28	Undergraduate (129)
Technology Based Interactions	Non-Significant	24	Not Provided (127)
Multiple-Group Memberships	Positive	25	First-Year (1239)

Parental Warmth	Positive	28	Undergraduate (129)
Parental Control	Non-Significant	28	Undergraduate (129)
Parental Involvement	Non-Significant	28	Undergraduate (129)
In-group Prototypicality	Positive	39	Residential College (171),
Social Challenges	Negative	73	First-Year (306)
Secure Attachments with Parents & Peers	Positive	128	First-Year Undergraduate (142)
Increased Phone / Email Contact	Positive	128	First-Year Undergraduate (142)
Demographic Factors			
Female Gender	Negative	8, 26, 42, 59, 77, 85, 89,	Medical (127), Whole-Australia (787), Chiropractic (194), Whole University (731), Whole University (1395), Education, Psychology and Social Work (905), Aged 24-26 (568)
	Non-Significant	19, 20, 29, 55, 60	Second-Year Undergraduate (176), First-Year Undergraduate (238), Psychology (305), First-Year Radiology (59), Nursing (920)
Older Age	Positive	23, 26, 59, 60, 69, 85	Whole University (239), Whole Australia (787), Whole University (731), Nursing (920), International (979), International
	Negative	57	(979), Education, Psychology and Social Work (905)
	Non-Significant	19, 20, 29, 58	Nursing (693) Second-Year Undergraduate (176), First-Year Undergraduate (238), Psychology (305), Undergraduate (203)
Living Away from Home	Negative	87, 128	Aged 18-25 (614), First-Year Undergraduate (142)
Being Employed	Positive	20, 60	First-Year Undergraduate (238), Nursing
	Non-Significant	19	(920) Second-Year Undergraduate (176),
International Student Status	Negative	77	Whole University (1395)
	Non-Significant	26, 85, 90	Whole Australia (787), Education, Psychology and Social Work (905), First-Year Undergraduate (402)
Undergraduate Status	Negative	26, 69	Whole Australia (787), International (979)
Being Married	Positive	60, 80	Nursing (920), First-Year Psychology (128)
Full-Time Study	Non-Significant	19	Second-Year Undergraduate (176),
Asian Ethnicity	Negative	69	International (979)
Socio Demographic Barriers	Negative	73	First-Year (306)
Law Student Status	Negative	74	Law and Psychology (188)
Having Children	Positive	80	First-Year Psychology (128)
Mental-Health Diagnosis	Positive	84	Five Australian Universities (2326)

University-Specific Factors			
University Belonging	Positive	25, 47, 74, 75, 76, 80	First-Year (1239), Whole University (4575), Law & Psychology (188), Law (225), Law (206), First-Year Psychology (128)
Academic Performance	Positive Non-Significant	13, 19 27, 32, 45, 65	Employed (401), Second-Year Undergraduate (176), Students with disability (83), Postgraduate Hotel Management (60), Undergraduate (218), First-Year Undergraduate (195)
Academic/Assessment Stress	Negative	4, 47, 67, 71	Law (481), Whole University (4575), Medical (755), International (979)
Teacher / Academic Support	Positive	19, 36, 47, 62, 72	Second-Year Undergraduate (176), Medical (403), Whole University (4575), Postgraduate Business (143), Medical (644)
Academic Satisfaction	Positive	30, 69, 71, 89	Students with disability (274), International (979), International (979), Aged 24-26 (568)
Academic Demands/Workload	Negative Non-significant	4, 76 47	Law (481), Law (206) Whole University (4575)
Study/Life Imbalance	Negative	4, 6	Law (481), Female Nursing (60),
Positive Feelings Towards University	Positive	21, 74	Social science (185), Law and Psychology (188)
Negative Feelings Towards University	Negative	21, 75	Social science (185), Law (225)
Supportive Peers	Positive	80, 89	First-Year Psychology (128), Aged 24-26 (568)
Peer Engagement	Positive	47	Whole University (4575),
University Adjustment	Positive	2	First-Year Undergraduate (184)
University Engagement	Positive	9	Business (952)
Trust in Peers	Positive	11	First-Year Undergraduate (342)
Trust in University	Positive	11	First-Year Undergraduate (342)
Absence of Supervisor Support	Negative	6	Female Nursing (60)
Considering withdrawing from university	Non-Significant	37	Indigenous (69)
Online Learning	Negative	44	Psychology (58)
Teacher Motivation	Positive	47	Whole-University (4575),
Supervisor Support	Positive	72	Medical (644)
Transitional Adjustments	Negative	73	First-Year (306)
Cohort Competitiveness	Negative	75	Law (225)
University Supportiveness	Positive	75	Law (225)
Lifestyle Factors			
Sleep Quality	Positive	22, 23, 58, 86	Medical Students (59), Whole University (238), Undergraduate (203), Fourth-Year Medical (151)

Exercise	Positive	23, 76	Whole University (238), Law (206)
	Non-Significant	58	Undergraduate (203)
Physical Health	Positive	49, 86	Whole University (3797), Fourth-Year Medical (151)
Diet Quality	Positive	23, 58	Whole University (238), Undergraduate (203)
Leisure Time	Positive	74, 76	Law and Psychology (188), Law (206)
Impactful Life-Experiences	Positive	10	Psychology (364)
Number of Life-Experiences	Positive	10	Psychology (364)
COVID impacting study	Negative	26	Whole Australia (787)
Problematic Smartphone Use	Negative	40	Psychology (539)
Dietary Changes (Due to COVID)	Negative	49	Whole University (3797),
Sexual Experience	Positive	53	First-year Psychology (240)
Experience of STD's	Negative	53	First-year Psychology (240)
Partying Behaviours	Non-Significant	54	Medical (92)
Balanced Lifestyle	Positive	71	International (979)
Connectedness with City	Positive	71	International (979)
Online Leisure Time	Negative	76	Law (206)
Exposure to Body Positivity	Positive	79	Psychology (113)
Exposure to Thinspiration	Negative	79	Psychology (113)
Exposure to Fitspiration	Non-Significant	79	Psychology (113)
Hazardous Alcohol Use	Negative	86	Fourth-Year Medical (151)
Access to Ethnic and Intercultural Resources	Positive	126	International Business (863)
Schoolies Attendance	Positive	109	Recent High-School Leavers (334)
Uplifting Daily Events	Positive	160	Education, Psychology and Sociology (123)
Daily Hassles	Non-Significant	160	Education, Psychology and Sociology (123)
Work-Related and/or Financial Factors			
Financial Stress / Insufficient Finances	Negative	7, 8, 20, 29, 71, 87, 89, 128	Psychology (150), Medical (127), First-Year Undergraduate (238), Psychology (305), International (979), Aged 18-25 (614), Aged 24-26 (568), First-Year Undergraduate (142)
Work Demands	Negative	19	Second-Year Undergraduate (176)
	Non-Significant	21	Social Sciences (185)
Positive Work Features	Positive	21, 52	Social Sciences (185), Undergraduates (163)
Likelihood to Pursue Rural Medical Placement	Positive	46, 72	Medical (454), Medical (644)
Financial Support	Positive	72, 87	Medical (644), Aged 18-25 (614)
Night Work	Negative	6	Female Nursing (60)
Career Pressure	Negative	4	Law (481)

Job Satisfaction	Positive	12	Not Provided (111)
Work-Study Congruence	Positive	13	Employed (401)
Work Support	Positive	13	Employed (401)
Employability	Positive	13	Employed (401)
Strain at Work	Negative	21	Social Sciences (185)
Hours Worked	Non-Significant	21	Social Sciences (185)
Work Conflicts	Non-Significant	21	Social Science (185),
Career Optimism	Positive	30	Students with disability (274)
Career Barriers	Negative	67	Medical (755)
Professional Expectations	Positive	67	Medical (755)
Preference to work in capital city	Positive	68	Medical (179)
Positive Appraisal of Rural Work	Positive	72	Medical (644)
Aversive Life Events			
Acculturative Stress	Negative	71	International (979)
Being Victimised (Bullying)	Negative	33	Psychology (127)

Table 2. *Qualitative accounts of association between wellbeing and other factors in studies conducted on Australian university student samples*

Concept *Sub-Concept* Associated Factor	Direction	Studies	Sample Characteristics (n)
University-Specific Factors			
Study/Life Imbalance	Negative	121, 129, 133, 134, 140, 144	First-Year (142), Medical (38), PhD (222), Whole University (2776), Social Work (2320), Social Work (60)
University Belonging	Positive	130, 138, 146, 148	Baby Boomer (12), Mature-Aged (1879), First-Year Undergraduate (18) First-Year Undergraduate (19)
Academic Demands/Workload	Negative	121, 125, 158, 143	First-year (142), Education (Not Provided), First-Year Health Science (132), Law (10)
Teaching Quality	Positive	147, 150, 133	First-Year Undergraduate (19) International (30), Whole University (2776)
University Engagement	Positive	143, 148	Law (10), First-Year Undergraduate (19)
Teacher/Academic Support	Positive	127, 133	Whole University (11), Whole University (2776)
Academic/Assessment Stress	Negative	154	Asylum Seekers (10)
Academic Satisfaction	Positive	129	Medical (38)
Supportive Peers	Positive	145	Chinese International (84)
Positive Feelings Towards University	Positive	148	First-Year Undergraduate (19)
Peer Engagement	Positive	135	Medical (68)
Learning in Small Groups	Positive	120	Undergraduate Nursing (11)
Fieldwork Experience	Positive	122	Science (116)
Class Attendance	Positive	124	Law (17)

University Causing Relationship Strain	Negative	132	Nursing Students with Children (22)
Dehumanising University Experiences	Negative	134	PhD (222)
Positive Interactions with Staff	Positive	135	Medical (68)
University Not Matching Expectations	Negative	148	First-Year Undergraduate (19)
Nature of International Student Life	Negative	149	International (21)
Use of Student Services	Negative	151	First-Year Undergraduate (19)
Social Factors			
Social Support / Positive Relationships	Positive	125, 129, 145, 148, 152	Education (Not Provided), Medical (38), Chinese International (84), First-Year Undergraduate (19), International, experiencing residential instability (12)
Social Isolation / Loneliness	Negative	131, 140, 144	Nursing (637), Social Work (2320), Social Work (60)
Distance from Family and Friends	Negative	121	First-Year (142)
Social Interactions	Positive	127	Whole University (11)
Family Support	Positive	139	Indigenous (30)
Autonomy from Parents	Positive	156	International (20)
Maintaining Familial Connections	Positive	156	International (20)
Psychological Factors			
Personality			
Dispositional Mindfulness	Positive	127	Whole University (11)
Spirituality	Positive	139	Indigenous (30)
Cognitive Skills			
Successful Coping Strategies	Positive	141, 153	Health Science, Social Work and Psychology (16), Medical (10)
Sleep Education Literacy	Positive	127	Whole University (11)
Inadequate English Ability	Negative	155	Postgraduate International (28)
Cognitive Styles, Attitudes and Beliefs			
Cognitive Engagement	Positive	145	Chinese International (84)
Perception of Community Wellbeing	Positive	139	Indigenous (30)
Future Uncertainty	Negative	142	Higher Degree by Research (26)
Self-Concept			
Cultural Identity	Positive	139	Indigenous (30)
Identity Growth	Positive	150	International (30)

Spirituality			
Connection to Country	Positive	139	Indigenous (30)
Sense of Purpose	Positive	110	Student Leaders (5)
Lifestyle Factors			
Routine Disruption due to COVID	Negative	125, 129, 136, 142	Education (Not Provided), Medical (38) Female International Working in Hospitality (3), Higher Degree by Research (26)
Exercise	Positive	145	Chinese International (84)
Physical Health	Positive	129	Medical (38)
Loss of face-to-face contact	Negative	125	Education (Not Provided)
Having Positive Indigenous Role-Models	Positive	139	Indigenous (30)
Perceiving Low Quality Housing as Temporary	Positive	152	International, experiencing residential instability (12)
Work-Related and/or Financial Factors			
Financial Stress / Insufficient Finances	Negative	121, 140, 157	First-Year (142), Social Work (2320), Medical and Nursing (103)
Negative Work Experiences	Negative	141, 153, 108	Health Science, Social Work and Psychology (16), Medical (10), Paramedicine during workplace placement (Not reported)
Career Identity Development	Positive	132	Nursing students with children (22)
Workplace Bullying	Negative	137	Medical (10)
Aversive Life Events			
Experiences of Discrimination	Negative	139, 150	Indigenous (30), International (30)
Acculturative Stress	Negative	153	Medical (10)
Traumatic Memories	Negative	154	Asylum Seekers (10)
Demographic Factors			
Living Away from Home	Negative	148	First-Year Undergraduate (19)

Table 3. *Interventions intended to influence the wellbeing of Australian university students*

Intervention	Evaluative Approach	Direction and Significance	Studies	Sample Characteristics (n)
	Quantitative			
Mindfulness	Pre - Post	Negative Positive	94 99, 103, 113, 159	Veterinary (70) First-Year Medical (148), First-Year Medical (205), Whole University (74), Whole University (236)
Peer Support	Pre – Post Treatment – Control Post Only	Non-Significant Non-Significant Positive	112, 95 107 110	Autism-Spectrum (10), Peer-Support Facilitators (14) First-Year International (108/238) Whole University (641)

Psychoeducation	Treatment – Control Pre – Post	Positive	109 119	Recent High School Leavers (388/95) Psychology (155)
Curriculum-embedded skills training	Treatment – Control	Non-Significant	106	Third-Year Psychology (54/65)
Web-based acceptance and commitment therapy	Pre – Post Treatment – Control	Positive Positive	115 116	Whole university (130) Whole university (566/596)
Nature Immersion	Pre – Post	Positive	97	PDHPE (54)
Wellbeing Plan Training	Treatment – Control	Positive	98	Whole-university (49/54)
Support Dog Intervention	Treatment – Control Within Subjects	Positive	100	Undergraduate Paramedicine (89)
Discrimination Priming	Treatment – Control	Negative	105	International (80)
Mental Health Day Participation	Post Only	Positive	111	Whole university (700)
Mobile App Coping Skills Intervention	Treatment – Control	Positive	114	Highly distressed (28/28)
	Qualitative			
Mindfulness	Interview	Positive	102	Physiotherapy (12)
Self-Care	Interview	Positive	117	Mental Health Nursing (32)
Museum Immersion	Interview	Positive	93	Postgraduate Optometry (81)
Cross-Cultural Meetings	Interview	Positive	96	Whole-university (28)
Gratitude Practices	Interview	Positive	101	Medicine and Physical Science PhD (8)
Tutor Support Sessions	Focus Group	Positive	104	International Social Work (43)
Art Based Therapy	Focus Group	Positive	118	International Higher Degree by Research (27)

Appendix 3

List 1. *Numbers corresponding with included sources*

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